

426/ 562

2

MEMORIAL

1900  
1900

~~9/11/1900~~

99/95

OF THE

U. S. PATENT OFFICE

MAY 25 1900

DIVISION 6.3

AMERICAN BAKING POWDER ASSOCIATION,

63

IN CONNECTION WITH

PURE FOOD LEGISLATION.



WASHINGTON:  
GOVERNMENT PRINTING OFFICE.  
1900.







PURE FOOD LEGISLATION.

MEMORIAL

OF THE

AMERICAN BAKING POWDER ASSOCIATION IN THE MATTER OF  
THE BILL S. 3618.

APRIL 21, 1900.—Presented by Mr. PROCTOR, from the Committee on Agriculture  
and Forestry, and ordered to be printed.

PAPER ON THE SUBJECT OF BAKING POWDERS AS AFFECTED  
BY THE PROPOSED PURE-FOOD LEGISLATION NOW PENDING  
BEFORE CONGRESS.

WASHINGTON, D. C., April 19, 1900.

*To the Senate of the United States:*

The undersigned association, representing manufacturers of alum baking powder of the United States, respectfully desires to present to your honorable body the following statements bearing upon the suggested pure-food legislation now pending in Congress and embodied in bill S. 3618, introduced by Senator Proctor, of Vermont, March 15, 1900, and also in many similar bills. We do not oppose pure-food legislation, but would welcome a just and equitable solution of the difficulties confronting our industry outlined herewith. We earnestly protest against the provision of the measure which lodges in the hands of a single individual the power to prescribe standards without the right of appeal to the courts. We desire that the branding of baking powders shall be so ordered that the residues or substances left in the food when ready for consumption shall be shown. We desire to present, as bearing upon the subject-matter, the following facts and arguments:

We object specifically to the passage of the bill on account of the words (in sec. 5, lines 19 and 20, p. 4) "or articles which enter into the composition of food."

This section is directly aimed at so-called alum baking powders. The proposed law makes it "the duty" of the Secretary of Agriculture to fix standards of food (including baking powders) and to determine the wholesomeness of substances added to foods (sec. 7). The proposed law declares that "it is adulteration of food if food contains any ingredient which may render such article injurious to health of the person consuming it (sec. 6, par. 6), and the penalties of the law attach



to adulteration. The decision of the Secretary of Agriculture is fixed as the standard which the United States court must recognize. (Sec. 7, lines 24, 25.)

These provisions of the law put the alum baking powder industries (exceedingly important in value and amount, as is shown hereafter) at the mercy of the Secretary of Agriculture. The point is not made that the present Secretary of Agriculture is not a perfectly reliable public official, nor that any future Secretary of Agriculture will not be equally honorable, but the alum industries object to a law that will place their business at the mercy of any one individual whose nod may destroy their industry without even a chance of recourse to the courts. The point is made that a Secretary of Agriculture may fix a "standard for baking powders which shall exclude alum," and the Secretary of Agriculture may be affected by the false prejudice against alum baking powders and by the misleading scientific testimony which has been created and fostered for the past twenty-five years by cream of tartar baking powder companies, and especially by the Royal Baking Powder Company, as will be shown hereafter. Dr. Wiley, the chief chemist of the Department, upon whom the Secretary of Agriculture must rely, is on record as testifying before the Committee on Manufactures as follows:

Chief Chemist WILEY. I have examined baking powders which contain alum.

The CHAIRMAN. Do you say that it is reprehensible to use it in this way?

Chief Chemist WILEY. I would say the same of it as I have said of salicylic acid (p. 46 of report of Mr. Mason).

He says of salicylic acid:

The CHAIRMAN. Do you consider it deleterious to health?

Chief Chemist WILEY. It is very deleterious to health (id., p. 214).

Now, in view of this testimony, what can this bill mean but that the alum baking powder industries are to be destroyed?

You are asked to notice that your petitioners emphatically assert that the use of alum in baking powders is harmless, effective, and beneficial.

You are also asked to notice that Dr. Wiley evades the exact question asked him—as to the use of alum in baking powders—and shifts the answer so that he may seem to answer a question as to the effect of alum itself as an article of food.

Now, the whole question of the effect of alum in baking powders is a matter at issue between the cream of tartar baking powder companies and the alum baking powder companies.

The alum baking powder companies declare it emphatically to be healthful, while the cream of tartar companies, and especially the Royal Baking Powder Company, solely and for business purposes have been instigating attacks on alum which have created a false and improper sentiment against the use of alum.

In order that your committee may understand the complete situation we present the following information:

#### WHAT IS BAKING POWDER?

Baking powder is a compound used for raising bread. The word "bread" is here used in its generic sense, meaning food that has been leavened. This includes cakes and all of the culinary products usually made of flour. The object attained by the use of baking powder is aeration. In former days yeast was used to produce a rapid fermentation, as a result of which carbonic acid gas was evolved. This gas when



liberated in the dough in the form of bubbles causes it to rise until it reaches a proper spongy character, at which time it is ready for the oven. Yeast is now very largely used in the production of loaf bread, or bread proper. In the use of yeast a certain amount of time and warmth is required for the production of the fermentation and the resulting carbonic acid gas. Yeast bread is therefore raised over night. In making biscuits or other bread products the cook has not the time requisite for using yeast; therefore she resorts to the use of baking powder.

#### OF WHAT ARE BAKING POWDERS MADE?

Baking powders are made by mixing a finely powdered substance possessing acid properties with bicarbonate of soda. Starch, or flour, is added as a filler to keep the chemical elements separate, and prevent their action upon each other while in the cans. As long as the powder is dry it will keep without chemical reaction. Baking powders are divided into four classes. The baking powder most extensively used is composed of exsiccated alum—that is, dried alum, or alum from which the water has been driven off by heat—and an equal amount of bicarbonate of soda. To the mixture is then added about a corresponding amount of starch. The result is a complete baking powder. Next in order comes the cream of tartar baking powder, which is composed of cream of tartar, bicarbonate of soda, and starch. The third class of powder is composed of acid phosphate of lime and bicarbonate of soda, mixed with starch, and intermediary to these classes are alum phosphate powders, composed of alum, acid phosphate, bicarbonate of soda, and starch.

#### HOW DO BAKING POWDERS ACT?

When one or more teaspoonfuls of baking powder are sifted into the flour which is used in the production of food, and water is added, the acid ingredient and the bicarbonate of soda enter into chemical combination, which results in the liberation of carbonic acid gas, the leavening agent. The rapidity of the action of baking powders and the consequent saving of time constitute one of the chief reasons for their great and growing popularity as a culinary adjunct, and there is never more alum used than necessary to release the gas—for alum is the expensive part of the process—and a manufacturer would not naturally use more than needed.

#### SALE.

The sale of baking powder in the United States to-day is divided about as follows:

Alum and alum phosphate baking powders aggregate, approximately, 100,000,000 pounds per annum.

Cream of tartar baking powders aggregate, approximately, 18,000,000 pounds per annum.

Phosphate powders probably do not aggregate more than 500,000 to 600,000 pounds, if so much.

#### WHO MAKE BAKING POWDERS?

The manufacturers of alum and alum phosphate baking powders number 524. The manufacturers of cream of tartar baking powders



number 8 or 10, and out of this number 3 are in a combination known as the Royal Baking Powder Company. This company puts out considerably over 90 per cent of the total output of cream of tartar powder, and absolutely dominates the cream of tartar field. Only one firm makes straight phosphate baking powder.

#### WHEN FIRST MADE.

The manufacture of cream of tartar baking powder commenced about thirty-five years ago. Alum baking powders have been in existence for about twenty-five years, and phosphate powders came later.

Competition led the high-priced cream of tartar powders to attack the cheaper alum baking powders and to endeavor to injure the manufacturers of them for reasons which will be explained.

#### RAW MATERIALS.

Cream of tartar is manufactured from argols, or wine lees—that is, the settlings in wine casks—which, purified and refined, make the cream of tartar of commerce. Most of the argols are imported from France and Italy.

Alum is made chiefly from bauxite, a species of aluminous earth. A small amount of it is made from cryolite, an aluminous mineral. It constitutes a great American industry.

This alum is in a crystallized form. It is then dried by heat, which throws off the water of crystallization, and, upon grinding, the residue is converted into an impalpable powder. Acid phosphate is made from calcined bone. Alum and phosphate are domestic products.

#### RESIDUES LEFT IN THE BREAD.

When cream of tartar is mixed with bicarbonate of soda to liberate carbonic-acid gas, the residue, after taking up water of crystallization, weighs nearly as much as the original product. This residue is Rochelle salts. When alum reacts with bicarbonate of soda, throwing off carbonic-acid gas, the resultant residue consists of hydrate of alumina and of sodium sulphate. (*Glaubers*)

Rochelle salts is an irritant drug with purgative qualities. Hydrate of alumina is a neutral substance with no harmful physiological effects. As will be explained later, there is no alum left as such in bread made with alum baking powder. Neither is there any cream of tartar left in bread made with cream of tartar baking powder.

#### RELATIVE VALUE.

The leavening power of 1 pound of alum baking powder is equal to the leavening power of 2, and in some cases of 3, pounds of cream of tartar baking powder. The price of alum baking powder to the consumer is 10 cents per pound, and the price of cream of tartar baking powder to the consumer is 50 cents per pound. As 1 pound of alum powder possesses the leavening power of 2 pounds of cream of tartar powder, the ratio of efficiency to cost is 1 to 10. In other words, 10 cents' worth of straight alum powder will do the work of at least one dollar's worth of cream of tartar powder, and in many cases will be equivalent to one dollar and a half's worth of tartar powder.



## COMPETITION LEADS TO ATTACK ON THE MORE ECONOMICAL PRODUCT.

The consumption of the alum powders has become so great that it is affecting the sale of the cream of tartar powders, in spite of the immense and diversified advertising carried on by the manufacturers of the Royal baking powder. The cost of leavening bread with Royal baking powder equals 80 per cent of the cost of the flour. The cost of leavening bread with alum baking powder represents 8 per cent of the cost of the flour. The Royal Baking Powder Company found it necessary to sustain its business commercially by a series of business expedients, one legitimate, but many dishonest and reprehensible. The legitimate effort is the advertising of cream of tartar baking powder.

The reprehensible methods are the gradual and persistent deception of the public by false and libelous statements, covertly inserted as reading matter in newspapers, declaring alum baking powder to be poisonous, detrimental to health, and a wholly unworthy product, and the utilization of the public prejudice which is created by its own false statements to enact legislation prohibiting the manufacture and sale of alum baking powders. The latest result of their effort in this direction is to be found in the report just given to the Senate under the auspices of Senator Mason, which is herewith quoted, and which contains many incomplete and misleading statements, not a few of which show a singular similarity with the statements made in the reading notices published by the Royal Baking Powder Company:

In view of the very general use of baking powder in the household economy and its consequent importance, entering as it does into the daily diet of young and old, the vigorous and enfeebled, of all classes and conditions of society, your committee approached the investigation of the subject with a great deal of care, determined, if possible, to gather such facts as would justify it in arriving at a conclusion that would satisfy the public mind and settle at once and forever whether fruit acid from the grape or mineral acid from alum was the proper constituent of a baking powder. In this your committee believes it has fully succeeded.

Attached to this report will be found the testimony of eminent scientific men, chemists, physiologists, and doctors of medicine, gentlemen of the very highest standing in their several professions, overwhelmingly condemnatory of the use of alum in the manufacture of baking powder and recommending that it be prohibited by law.

This testimony is of a character that must command the confidence and respect of those whose aim and object it is to get at the truth and who seek to promote the public welfare by conserving the public health.

While your committee recognizes the existence of a general repugnance to what is termed sumptuary legislation, and while it still further recognizes the consideration due to private rights as represented by the capital invested in the manufacture of alum baking powders, yet it conceives there is still a higher duty due from the State to its citizens in protecting them against an article or articles distinctly deleterious to the public health. It was with this ultimate object in view that your committee was authorized to make the searching investigation in which it has been engaged for the past twelve months and covering a wide range of subjects, and it would feel that its time was worse than wasted if it were not prepared to make specific recommendations based upon the evidence which it has taken, where such evidence is conclusive. Therefore, so far as the use of alum in the manufacture of a food product, such as baking powder, is concerned, the committee, in view of the overwhelming mass of evidence antagonistic to its use, recommends that its use in food products and baking powders be prohibited by law.

Another reprehensible method of advertising, which the Royal Baking Powder Company has adopted, is making contracts with the papers inserting their advertisements, which prevent such papers from inserting any matter contradictory to the statements published by the Royal Baking Powder Company, and guaranteeing to stand the costs of suit brought on account of these publications.



## CHEMISTRY OF CREAM OF TARTAR.

It is admitted by all parties in the baking powder controversy that the baking powder goes through a chemical reaction and leaves a residue in the bread. This residue is what the consumer eats. This residue is the basis upon which all controversies regarding the merits of the baking powder must rest.

Cream of tartar and bicarbonate of soda produce a residue of Rochelle salt. The character of residue is recognized by all parties to the controversy, and no question is raised by anyone but that it is Rochelle salt. The quantity of Rochelle salt left in a loaf of bread made from a quart of flour equals one ordinary dose of this salt. Rochelle salt is a medicine used as an active purgative. In part 5 of bulletin 13, submitted to the Commissioner of Agriculture by Dr. H. W. Wiley, chief chemist of the division of chemistry, it is stated that:

I doubt if many persons understand that when they use tartrate powders, which are considered to be the best class, or at least one of the best classes of such powders, they introduce into the breadstuffs very nearly an equal weight of the active ingredient of seidlitz powders, and in a loaf made from it they consume more than the equivalent of one such powder.

## CHEMISTRY OF ALUM.

The first attack upon the use of alum in bread products arose in England, where it became the custom of numerous bakers to mix pure alum with an inferior flour in order to whiten it. This was clearly both an adulteration and a fraud, and as such was recognized as reprehensible, not because the alum was considered harmful, but because it made possible the sale of inferior flour as a superior article. Laws were therefore enacted to prohibit the use of alum in this manner. About this time, and as the result of laws passed to prohibit the use of alum for whitening purposes, attention having been directed to the use of alum in baking powders, manufacturers of such powders were arrested on the theory that the alum in the powder went into the bread and, remaining in it unchanged, was consumed as alum.

The friends of alum baking powder pointed out the fact that the alum, in association with soda, entered into chemical reaction, and that the residue left in the bread after this chemical reaction was what the courts had to deal with. Experiments were conducted which showed that this residue was not harmful. The court decided that as baking powder was not a food it was not subject to the food laws unless a special enactment included it; and even if included no evidence had been adduced to show that it was harmful, and that the testimony was largely in favor of alum baking powder as a healthful leavening agent.

The opponents in this country of alum baking powders immediately began to advertise the fact that alum was subject to legal restrictions. They failed to point out the distinction made by the learned judge that the law did not affect baking powders, or that it was not a question of alum, but a question of a residue. In their public announcement they gave the information that alum had been condemned by the laws of England and its use prohibited, and by degrees they advanced from the statement that it was astringent and would disturb the digestion to the ultimate declaration that it was an active poison, a corrosive acid, etc., following it by stating that it was used in baking powder and that it was a substance for people to avoid for fear that they would be poisoned, all of which was as absurd as it was false.

They then proceeded to employ chemists to investigate this subject



and report the harmful nature of alum. The result of these one-sided investigations was the creation of the partisan literature on the subject, which, however, is based upon chemical or laboratory experiments with alum, and not upon physiological experiments with human beings. The result obtained is the presentation of evidence as to the effect of alum, but not as to the effect of the residue left in bread baked after using an alum baking powder or the effects of food prepared with alum baking powder. The evil effect of alum was heralded and the statement made that a baking powder containing alum must therefore be harmful. Indeed, it was advertised that a whole family had been killed by eating food prepared with alum baking powder, a statement which investigation proved to be absolutely false. The fact that the chemical reaction converted the alum into another substance and left a harmless residue has been always deliberately ignored.

The bicarbonate of soda and the exsiccated alum combine, leaving a residue of hydrate of alumina. Hydrate of alumina is not alum. That is an elementary chemical fact. The conversion of alum into an entirely different substance during the leavening of the dough, and into one having entirely different properties, is instanced in the method for making bread on a manufacturing scale proposed by Von Liebig, one of the world's greatest chemists. In his opinion the ideal leavening agent would be dilute muriatic acid and bicarbonate of soda. Pure muriatic acid, as we well know, is a very powerful and corrosive acid, which, when taken internally, acts as a corrosive and fatal poison, irritating and destroying those tissues with which it comes in contact; but when muriatic acid largely diluted with water combines with bicarbonate of soda in the leavening of bread the residue which is left therefrom is common salt. The muriatic acid is entirely destroyed, leaving a harmless residue of table salt.

Prof. Austin Flint, the greatest physiologist of this country, author of *The Physiology of Man*, in five volumes, decorated by France, etc., and an unquestioned authority on physiological chemistry, who had associated with him Prof. Peter T. Austen, the distinguished chemist of New York City, and Dr. E. E. Smith, formerly connected with Yale University, has proved in a series of experimental physiological investigations that hydrate of alumina is inert; that it has no effect upon the secretion of gastric juice, nor does it interfere with the digestion of food products into which it enters; that it has no medicinal effects, and is passed off as inert matter.

These investigations, which were conducted with scientific care and exactness and in great detail, and with the application of the most modern of scientific methods, conclusively proved, not only that bread made with alum baking powder was wholesome, but that it was as nutritive in its qualities and as healthful as bread made by the well-recognized Liebig process. As these experiments are the only ones that have been conducted on human beings, in which the most modern means of investigation have been applied, they conclusively prove that the effect of hydrate of alumina is entirely negative, neutral, and that therefore bread made with alum baking powder, which leaves hydrate of alumina as the residue, is as wholesome and nutritious as the Liebig ideal bread.

The experiments which have been hitherto conducted at the expense and under the direction of the Royal Baking Powder Company, having been chemically conducted under artificial laboratory conditions and not determined on a physiological basis upon human beings, with the food stuffs made with alum baking powder, must be regarded as



of little value when the real question at issue is not what effect alum might have, or, indeed, what effect hydrate of alumina has, upon a human being, but is food prepared with alum baking powder harmful or not? This simple question and most plain proposition is dodged and evaded by the experts in the hire of the Royal Baking Powder Company with almost simian-like agility and adroitness. Testimony as to the physiological effect of the use of alum baking powders is to be found in the verbatim report of Senator Mason's investigations, as presented by Prof. Peter T. Austen. *This testimony—the only really valuable testimony in his investigations on this subject—Senator Mason has, however, totally ignored in his report to the Senate.*

#### PREVIOUS ATTEMPTS AT PROHIBITIVE LEGISLATION.

The Royal Baking Powder Company, having accumulated a mass of alleged evidence against alum, most of which is incomplete, garbled, or false, and having gone further and advertised the alleged discoveries of its harmfulness, at an approximate expense of \$500,000 per annum for many years, and having thus laid the foundation upon which their accusations might rest, and having created in the public mind an apprehension that alum baking powder was dangerous to use, a number of bills began to appear in various States, which declared that any baking powder which contained alum must be so labeled, as, for instance, "This baking powder contains alum." Owing to the popular impression fostered by the Royal Baking Powder Company that alum was harmful, the various manufacturers of alum baking powder, who were obliged to put the word "alum" upon their cans, suffered a great injustice.

The people who were using these powders constantly read that alum was a poison; and the word "alum" was by law placed upon the cans, but the users were not informed that there was no alum in bread made from an alum baking powder, even though the powder was contained in a can labeled "alum." Not even legislation can alter a scientific fact, and now that this gross attempt to deceive and mislead people and to prevent them from obtaining a cheap and efficient article, as well as to force them to buy Royal Baking Powder at a much higher price, is becoming recognized and understood, it will receive well-merited condemnation. This did not prevent the use of these powders by those who had become accustomed to them, for they felt no ill effects. Their effect as leavening agents was superior and the cost was so very much less than the cost of cream of tartar powders that the demand continued in spite of the misleading and false advertising.

The failure of this class of legislation to work out the object of the Royal Baking Powder Company having been made apparent to it by the continued use of alum baking powders, it sought other means. A bill was clandestinely passed in Missouri prohibiting the manufacture or sale of any article that contained alum and which was to be used in the preparation of food. None of the 31 manufacturers of alum baking powder in Missouri was given notice of any hearing, nor did they know of its passage until they found themselves legislated out of a business in which they had been engaged for twenty-five years.

In order to still further increase the apprehension in the public mind of the dangerous properties of alum, alum was adroitly grouped with several virulent poisons, such as corrosive sublimate and arsenic, which, it is needless to say, are not and never have been used in the preparation of food. This, of course, struck directly at the alum



baking powder industry and menaced all engaged in its manufacture with utter annihilation. The law went into immediate effect on its passage, threatening with destruction the property of all grocers who had alum baking powders in stock, and, furthermore, seriously affecting the trade of those manufacturers outside of Missouri who had sent alum baking powders into the State.

This law was introduced in the following States: Georgia, Virginia, Mississippi; reintroduced in Mississippi and Virginia, New Jersey and New York, and defeated as soon as its true character became known.

In the meantime a manufacturer of alum baking powder in Missouri was arrested under the new law and the other manufacturers of alum baking powder banded themselves together to defend him. It was then discovered that the case against him, which was to be contested in the State of Missouri by the State, was really to be conducted by an able attorney of St. Louis in the employ and pay of the Royal Baking Powder Company. At this trial, which has been recently concluded (the decision will be found in this memorial), evidence referred to above of the physiological experiments conducted by Prof. Austin Flint and others was given as testimony. The testimony of men working in alum factories, grinding exsiccated alum was presented and proved that for a period of twenty, sixteen, and thirteen years, respectively, these men had worked in this alum dust without harm to themselves. Their appearance was perfectly healthy, and their records showed that for two and three years at a time they had not missed a day. Evidence of people using alum baking powder, proprietors of large hotels, proved that to their knowledge no deleterious effects had followed the continued use of alum baking powder. The evidence of persons working in the alum baking powder factories, who lived in the dust which completely surrounds the filling of the cans, and who swallow it every day, showed that no deleterious effects had been observed in this class of work.

All of this, together with the testimony of physicians, and of manufacturers of baking powder, who had for long years distributed alum baking powder throughout the country, and who knew from personal observation that a large percentage of the people are using alum baking powder in the preparation of food and are still healthy and unharmed, made a complete case as to the wholesomeness of bread made with alum baking powder. (See decision of Judge Clark below.)

The witnesses in rebuttal of this testimony numbered among them Professor Vaughn, of Ann Arbor; Professor Prescott, of Ann Arbor, and Professor Mallet, of Virginia. These witnesses testified also before the Mason investigating committee as to the harmfulness of alum, and endeavored to infer that the use of alum in baking powder was harmful. None of these gentlemen were, however, able to point out a single case of functional disorder or diseased condition which they could trace to the use of food prepared with alum baking powder.

Each of the ten witnesses in the Missouri case testified that he appeared at the request of the Royal Baking Powder Company, and that he was paid for his appearance. At this trial the astonishing fact was also elicited that the article on the physiological effects of hydrate of alumina, published in the Chemical News, of London, by Professor Mallet, and which has been supposed to be in every way an independent, disinterested, and purely scientific piece of work, had been undertaken at the suggestion of Mr. Hoagland, of the Royal Baking Powder Company, and paid for by that company. In connection with this published investigation of Professor Mallet it is interesting to note that in part 5 of bulletin 13, submitted to the Commissioner of Agriculture by



Dr. H. W. Wiley, chief chemist of the division of chemistry, the physiological work of Professor Mallet is not considered to be of value.

The article above referred to appears in full in the verbatim report of the investigations conducted by Senator Mason relating to the question of pure foods. It is worthy of note that this article was published in 1888, and since that time it appears that Professor Mallet has done no further work in this direction, although it is a well-known fact that the chemistry of alum has been developed wonderfully, and floods of new light, showing that alum baking powders are wholesome, have been thrown upon the subject. It may also be noted that the manufacture of the ingredients of alum baking powders, the mixing of baking powders and all the details of the manufacturing operations have been greatly improved during this interim and their cost largely reduced.

It then became apparent that the Royal Baking Powder Company was not only interested by the passage of the bill prohibiting the use of alum baking powder, but that it was actually attempting to enforce this law under the good name of the State of Missouri. Its purpose in so doing is clearly apparent when it is considered that out of 5,000,000 pounds of baking powder used annually in the State of Missouri it probably does not sell more than 500,000 pounds; and it must be apparent that if the manufacture or sale of alum baking powder in Missouri was prohibited by the operation of this law its business would very largely increase.

#### THE ULTIMATE AIM OF THE ROYAL.

The strenuous efforts made by the Royal Baking Powder Company to get a decision against alum baking powder in the Missouri case is further accounted for by the fact that it would strengthen the position of other bills introduced in various other States and make more possible their passage. The bills introduced in other States were exact copies of the Missouri law. If this legislation were permitted to go unchallenged, the Royal Baking Powder Company would be able to legislate its opponents out of business, State by State, and, as it controls virtually all the cream of tartar manufactured in this country, it would become the absolute master of the situation.

The bill introduced in the present Senate (by request) by Senator Foster (S. 4047) is practically the same as the Missouri bill and serves precisely the same purpose.

For the past two or three years it has been working toward the end which has now become apparent in the pure-food bills before Congress, and has been endeavoring, by the aid of national legislation prohibiting the manufacture and sale of alum baking powder, to accomplish in a wholesale way what it finds it impossible to accomplish in detail by the passage of prohibitory legislation in the various States.

#### THE NATIONAL PURE-FOOD CONGRESS.

The object of the National Pure-Food Congress was to stimulate a sentiment for pure food, and to this certainly no one could object. It is, however, surprising, to say the least, that in an address before this congress, which received boisterous applause, Mr. F. B. Thurber should have condemned in a most vigorous way the use of alum baking powders and claim that their use in preparing food was harmful to health and that on the day before he should have been condemning in the same vigorous way before the committee on health of the senate of the State



of New York the use of alum baking powders, but in support of the bill, which proposed to make it a crime to manufacture or sell an alum baking powder in that State. The thoroughness with which the representatives of the Royal do their work is shown by the testimony given before the Pure-Food Commission and the constant intelligence with which questions were directed so as to bring out some only too willing witnesses to testify against alum, and the final report, which absolutely and utterly excludes the physiological investigation, which was testified to before the commission with the express purpose of giving a final and complete answer to the calumnies that had been heaped upon the alum baking powder industry, as well as the published favorable testimony and indorsements of alum baking powders by eminent scientific men.

This Royal baking powder corporation has gone forward unhampered by opposition, until the boldness of its moves and the open arrogance with which it is attempting to manipulate both State and national legislation disclose its own weakness, when it faces true economic conditions, and its unscrupulous endeavor to exterminate by strangulation a competition which it can not meet, either in quality or price. Its agents and representatives in legislative and commercial fields are now being exposed to the full fire of an intelligent criticism, based upon the knowledge of their connections and of the faithfulness with which they are doing the work of their employer.

#### A CONSPIRACY.

A history of this remarkable movement will reveal a conspiracy of a most astounding nature to exterminate legitimate business competition. It includes the false education of the public by the publication of untrue, incomplete, and garbled statements; the exclusion from the public press of all matter contradictory to its published statements or derogatory or injurious to its business, no matter how false these statements may be or how true the injurious matter may be, the carefully planned attempt to mislead and deceive the public by advertising the purity of cream of tartar and the fact that it is obtained from the grape, and hence that a baking powder containing it must produce a healthful food, when it is an easily demonstrable chemical fact that in the raising of bread with a cream-of-tartar baking powder the cream of tartar is destroyed, and just old-fashioned, plain, everyday Rochelle salts are left in the biscuits and cakes; to mislead and deceive the public by advertising the alleged horrible and poisonous properties of alum, and similar scare-crow absurdities, and then endeavoring to make the public believe that because alum exists in a baking powder it must exist in the bread made with such a powder, which is an insult to intelligence; to secure the passage of laws in the various States making it a misdemeanor to sell a baking powder containing alum; to secure valuable pecuniary advantage in certain reciprocity treaties, and thereby get their cream of tartar at such a reduced price that it can be sold in the far West to the injury of the American manufacturer of that article, and, lastly, to secure national legislation which, under the innocent guise of protecting the public against adulterated food, will exterminate alum baking powders and compel the citizens of the United States to buy Royal baking powder.

Chief Chemist Wiley, of the Chemical Division of the United States Department of Agriculture, has from the first been one of the prime movers in the National Pure-Food Congress. The object of this con-



gress was the passage of a pure-food law. If the bill passes, Dr. Wiley will become, under its provisions, practically the administrator of this law. In the bill presented to the Senate by Senator Mason are embodied provisions which would make it possible to include baking powders under the operation of a food law. Dr. Wiley stated, before the Senate Committee on Manufactures, during its pure-food investigation, that he regarded alum in baking powder as very deleterious. The testimony of Dr. Wiley and the report of Senator Mason recommending prohibitory legislation make it fair to infer that Dr. Wiley, under the bill, will be compelled to establish a standard for baking powder which would not include alum baking powder or else to declare it harmful and deleterious, and thus prohibit its sale.

The standard so fixed will be the standard before all courts, and any ruling or regulation by Dr. Wiley or the Secretary of Agriculture could thus be enforced and a great industry slaughtered for the benefit of the Royal Baking Powder Company. A hundred million pounds of alum baking powder, now made annually, would be taken out of the market, and the Royal Baking Powder Company's business would increase very largely over the 16,000,000 pounds it now makes. The economic effect of prohibitory legislation, excluding from the markets alum baking powder, would be to leave cream of tartar baking powder occupying the field practically without competition. As the Royal Baking Powder Company not only controls over 90 per cent of the total output of cream of tartar baking powder, but also controls argols and the manufacture of cream of tartar, a careful calculation *shows that the increased cost to the people of the United States using baking powder of the change from alum baking powder to cream of tartar would be something over \$60,000,000 per annum. This stupendous volume of business would go directly to the Royal Baking Powder Company, and would result in a yearly consumption of Rochelle salts by the public of well on to 120,000,000 pounds, or 60,000 tons. It may be here remarked that eminent medical authorities claim that the continued use of small amounts of Rochelle salts is extremely harmful, and some, indeed, claim that the prevalence of Bright's disease is owing to the consumption of Rochelle salts in food.*

The reason why prohibitory legislation is attempted in this case is, therefore, a financial one, and is not based upon any philanthropic desire of the Royal Baking Powder Company to protect the people of the United States from an article that 60,000,000 of them have been using for the past twenty-five years, and from the use of which the chemists in the employ of the Royal Baking Powder Company have failed under oath to establish a single case of harmful effect or sickness.

#### THE PROPOSED MONOPOLY.

We understand that the total capital stock of the companies combined in the existing Royal Baking Powder Company is said to have been at the time of consolidation \$960,000. The present company is, we are informed, capitalized at \$20,000,000. The \$19,040,000 additional capital is therefore a valuation placed upon the word "Royal" and to the public impression created by years of advertising that alum as used in alum baking powder is a corrosive acid and poison, and therefore dangerous to use. As the statements detrimental to alum baking powder are false and libelous, and as the value of the public impression created by advertising is represented by a capitalization upon which dividends are being paid, this company is not only practicing a fraud upon the people of the United States and earning dividends by



misrepresentation, but it has now committed the graver error of attempting to seize by prohibitive legislation the method by which 80 per cent of the people leaven their bread, and, by controlling the supply of cream of tartar, open the way to a complete monopoly.

As a matter of fact, the evolution of alum baking powders is but one of the many striking instances of the advance of modern science which has so greatly decreased the expense of living, and made it possible for the public to obtain not only many necessary and standard articles at a reduced cost, and in a purer condition, but to offer to the public new articles of greater merit and purity at such a reduction in cost as to materially affect the economic conditions of the country.

The production of pure exsiccated alum at a low price is the result of years of scientific experimenting both in the laboratory and on a large manufacturing scale. The perfecting of methods of chemico-physiological experimentation has made it possible for scientists to determine with much greater accuracy than heretofore the effects of substances on the human system. Surely the American public has a right to the practical application of these discoveries and inventions—in other words, to the results of the progress of American science.

In view of the facts that 100,000,000 pounds of alum baking powder are yearly consumed in the United States; that great quantities of the baking powder consumed in England is alum baking powder; that no case of any kind of sickness or functional disorder has ever been traced to the use of food prepared with alum baking powder (although the commercial value of any proved case of sickness caused by food prepared with alum baking powder would be enormous to the Royal Baking Powder Company); that the public can buy alum baking powder at a cost of 10 cents a pound against \$1, or even \$1.50, for equal efficiency in the case of the Royal baking powder; that the alum powder works better in leavening than a cream of tartar powder; that the strongest kind of medical denunciations have been made against the indiscriminate consumption, especially by children, of Rochelle salts—in view of these facts it is a travesty on justice, an outrage on the rights of the citizens of the United States, that thrift, economy in the cost of living, if not protection against the insidious formation of a drug habit, and the right to use, apply, and take advantage of the most recent advances in science and the art of manufacturing should be opposed or even restricted, and that the machinery of State and national legislation should be set in motion almost solely to benefit one corporation, which is neither able to keep abreast of scientific progress nor to withstand legitimate business competition, but is compelled to resort to a policy of lies, repression, and oppression in order to continue its existence.

#### IN CONCLUSION.

It will be seen by the foregoing that the following facts are proven:

First. Alum baking powders are wholesome. Cream of tartar baking powders are not so wholesome.

Second. Alum baking powders are economical, because it is an acknowledged fact that 10 cents' worth of alum baking powder will do the work of one dollar's worth of cream of tartar baking powder.

Third. Alum baking powders and all the ingredients entering into them are of domestic manufacture. Cream of tartar powders are made from argols, so that 85 per cent of the cost of the materials used is paid to foreign countries.



EVIDENCE IN SUPPORT OF THE CLAIM THAT THE ROYAL BAKING POWDER COMPANY PUBLISHES FALSE AND LIBELOUS ADVERTISING.

As before stated, the agreements made by the Royal Baking Powder Company with newspapers provide for the publication of pure reading matter "on local or news page, set in same size and style of type and with the same style of heading as the pure reading adjoining, to be surrounded by pure reading and without date or anything to designate them as paid matter, and with the express understanding that they are not, at the date of publication or afterwards, to be designated or classed by any article or advertisement in your paper, as advertisements, or as paid for, or as emanating from us."

Their contracts usually provide that the publication of any matter detrimental to their interests shall be construed as a violation of the contract.

The following is one type of advertisement very widely distributed:

[From the Commercial-Appeal, Memphis, Tenn., January 2, 1900.]

SAID TO BE ALUM POISONING—SERIOUS CASE OF ILLNESS REPORTED FROM THE USE OF IMPURE BAKING POWDER.

[Johnstown, Pa., Tribune.]

The poisoning of the Thomas family, of Thomas Mill, Somerset County, four members of which were reported to have been made dangerously ill by impure baking powder used in making buckwheat cakes, has been further investigated.

The original can, with the remainder of the baking powder left over after mixing the cakes was secured by Dr. Critchfield. The powder had been bought at a neighboring country store, and was one of the low-priced brands.

Dr. Critchfield said that the patients had the symptoms of alum poisoning. As the same kind of baking powder is sold in many city groceries as well as country stores, Dr. Critchfield thought it important that a chemical examination should be made to determine its ingredients. He therefore transferred the package of powder to Dr. Schill, of this city, for analysis. Dr. Schill's report is as follows:

"I certify that I have examined chemically the sample of \* \* \* baking powder forwarded to me by Dr. Critchfield. The specimen contained alum."

Dr. FRANCIS SCHILL, Jr., *Analyst*.

Alum is used in the manufacture of the lower priced baking powders. It is a mineral poison, and for this reason the sale of baking powders containing it is in many cities prohibited.

[From the Las Vegas, N. Mex., Weekly Optic, January 6, 1900.]

REPORTED POISONING BY ALUM BAKING POWDER.

The Johnston, Pa., Tribune reports four cases of poisoning near that city from the use of baking powder which, when analyzed, was found to contain alum. Recently in New York two deaths occurred from poisoning by the use of powders sent to victims in samples.

Many brands of alum baking powders are for the purpose of introducing them sampled from door to door. There are others which grocers get 5 or 10 cents a can for recommending to customers. Neither of these methods are ever employed to sell the pure high-class goods.

No long ago at Williamsport, Ind., there occurred a fatal case of poisoning from the use of one of these recommended baking powders, which it was afterwards discovered was mixed with poisonous ingredients.

People can not be too careful about what they eat. It is only safe to refuse all miscellaneous samples of food, or medicine left at the door or which is specially recommended by grocers or their clerks are paid a bonus.



## THE TRUTH OF THE MATTER.

The Thomas family, of Thomas Mills, Somerset County, Pa., make the following statement:

THOMAS MILLS, January 29, 1900.

This is to certify that we, the members of the Thomas family, are at present using an alum phosphate baking powder, the same as before, having been reported to have been poisoned by it at the hand of the Royal Baking Powder Company's representative, Mr. La Fetra. We were not poisoned by alum baking powder, as reported, but by arsenical poison by using a newly painted sausage machine, and some paint, some way, got into the fresh sausage made for us, which we ate for supper.

The doctors did not tell us that the symptoms were alum poisoning, but arsenical poisoning caused by the paint. We have purchased since being poisoned, and are at present using, an alum baking powder, and consider an alum baking powder superior to any other ever used by us, and we have used at times cream-of-tartar powders. Dr. Critchfield told us that he had reports from two analysts, who stated that there was no poison in the powder we were using. We subscribe ourselves as true users of alum phosphate baking powder.

Yours, very truly,

SILAS THOMAS,  
JOHN THOMAS,  
JESSE THOMAS,  
MARY THOMAS,  
LENA R. THOMAS,  
FANNIE THOMAS,

*Members of the Thomas Family.*

## CRITCHFIELD'S STATEMENT.

Dr. J. B. Critchfield, who attended the Thomas family when poisoned, states as follows:

DAVIDSVILLE, January 29, 1900.

*To the public:*

This is to certify that I, Dr. J. B. Critchfield, the doctor of the Thomas family, hereby state that I did not say that the Thomas family was poisoned by alum poisoning, but, on the contrary, did say that the symptoms were arsenical poisoning. The Royal Baking Powder have used my authority falsely in the matter. I am,

Very truly, yours,

J. B. CRITCHFIELD.

## AFFIDAVITS AS TO ABOVE.

Personally appeared before me S. B. Sleek, of the city of Kansas City, State of Missouri, who, being duly sworn, doth depose and say:

That on Friday, April 20, 1900, I drove to Thomas Mills, Pa., and called on the members of the Thomas family, and that the attached signed statement was signed by them in my presence, I knowing them to be perfectly familiar with statement signed. I also called on Dr. J. B. Critchfield, at Davidsville, Pa., on same day, and certify that the attached statement was signed by him in my presence, these statements pertaining to the poisoning of the Thomas family, of Thomas Mills, Somerset County, Pa.

S. B. SLEEK.

Subscribed and sworn to before me this 20th day of April, 1900.

[SEAL.]

EDW. E. LEVERGOOD,  
*Alderman, City of Johnstown, Cambria County, Pa.*

Personally appeared before me Silas, Jesse, Mary, Lena, and Fanny Thomas, each and all personally known to me, and each having been duly sworn severally and collectively, doth depose and say:

That the advertisement in the Johnstown Tribune about our being poisoned by the use of baking powder which contained alum was a false advertisement, as we were not poisoned by the baking powder at all, but were poisoned from the use of a new sausage machine in which we made sausages for supper.

We have been reported as having been poisoned by the use of baking powder which contained alum, at the hands of Mr. La Fetra, of the Royal Baking Powder Company,



but it is not the truth, as both Dr. Schill and Dr. J. B. Critchfield said that the baking powder we were using was all right and did not poison us at all. We are still using baking powder which contains alum, as we believe it to be all right in every way.

Signed and attested under oath properly administered by me and in due accordance with the law.

SILAS THOMAS.  
JESSE THOMAS.  
MARY THOMAS.  
LENA THOMAS.  
FANNY THOMAS.

APRIL 20, 1900.

Personally appeared before me J. B. Critchfield, who deposes and says as follows: That I am the doctor who attended the Thomas family who were poisoned some time ago.

The statements and advertisements of the Royal Baking Powder Company that I stated that they (the Thomas family) were poisoned by alum in baking powder is false. I never made any such statement. Mr. La Fetra, the agent of the Royal Baking Powder Company, called on me and asked me if I would state that the poisoning was alum poisoning, and I told him I would not.

They have in their advertisement misquoted me and have made false statements in regard to the matter, as the symptoms were arsenical poisoning and not alum.

J. B. CRITCHFIELD.

APRIL 20, 1900.

Personally appeared before me Francis Schill, jr., who, being duly sworn, deposes and says:

I, Dr. F. Schill, jr., am the physician who examined the baking powder brought to me from Dr. Critchfield by Mr. La Fetra, of the Royal Baking Powder Company, which was said to have caused the poisoning of the Thomas family. At his request I examined it for alum only, which I found it contained. He wished me to sign a statement that in my estimation alum baking powders caused symptoms such as obtained in the Thomas family. This I refused to do. He wished all mention of his name or his companies to be excluded from my statement. Not by direct implication, but by innuendo, they have placed me in a false position, leading the public to infer that I went on record as saying such alum baking powders were injurious to health and had caused the poisoning of the Thomas family. This letter I emphatically deny.

Dr. FRANCIS SCHILL, Jr.

Subscribed and sworn to before me this 20th day of April, 1900.

[SEAL.]

EDW. E. LEVERGOOD,  
*Alderman, City of Johnstown, Cambria County, Pa.*

#### CRITCHFIELD'S AND SCHILL'S REPORT.

Both Dr. Critchfield and Dr. Francis Schill, jr., state that they were called on by an agent of the Royal Baking Powder Company, and were offered every inducement to say that the poisoning was alum poisoning due to the use of alum baking powder, and that a sample of which was analyzed contained alum and was poisonous and injurious to the health. They both refused, under any consideration, to make any such false statements, and endeavored to have inserted in the newspapers in Johnstown a true statement of the facts, but the papers refused to publish the same, stating that on account of a contract they had with the Royal Baking Powder Company they could publish nothing of this character for them.

In having an interview with the Thomas family to-day they say that they are still using the same baking powder they were before having been poisoned. They say further that they were poisoned by using a newly painted sausage grinder, in some way letting some of the paint get into the sausage. The Royal agent tried to get the Thomas family,



as well as Dr. Critchfield, to state that the baking powder did the harm, but each refused to submit themselves to such business, and Mr. La Fetra then took authority upon himself to do the work.

The exposure of the Royal Baking Powder Company in the matter of the Thomas case, and the false character of its publications regarding the Thomas family are and have been known to it, as well as to the general public, for some time, and yet the following appeared in the Syracuse Post-Standard on March 24, and is an illustration of their conscienceless policy.

#### REPORTED POISONING BY ALUM BAKING POWDER.

The Johnstown, Pa., Tribune reports four cases of poisoning near that city from the use of a baking powder which, when analyzed, was found to contain alum. Recently in New York two deaths occurred from poisoning by the use of powders sent to victims in samples.<sup>1</sup>

Many brands of alum baking powder are, for the purpose of introducing them, sampled from door to door. There are others which grocers get 5 or 10 cents a can for recommending to customers. Neither of these methods are employed ever to sell the pure, high-class goods.

Not long ago at Williamsport, Ind., there occurred a fatal case of poisoning from the use of one of these recommended baking powders which, it was afterwards discovered, was mixed with poisonous ingredients.

People can not be too careful about what they eat. It is only safe to refuse all miscellaneous samples of food or medicine left at the door, or which to specially recommend grocers or their clerks are paid a bonus.

It is their policy, wherever they find a competitor distributing samples from house to house, to publish articles warning people against the use of articles so distributed, and especially against baking powder. The following clipping from the Syracuse Post-Standard of March 28 speaks for itself:

#### ARREST HIM ON SIGHT.

There is no greater or more dangerous traveling nuisance in the country than the fellow who goes from house to house in town or country leaving sample packages of patent medicines or foods in houses, on porches, doorsteps, or in yards. This thing has been done frequently in this town during the past year. Only a few days ago a lady used a package of baking powder left at her home with the result that all who ate of the food were made sick. Numerous cases of illness from a similar cause have been reported from various parts of the country in the past few months. Our constable or policeman should have strict orders to arrest on sight any person distributing medicine or food samples in this way. It is too dangerous a practice to be tolerated.

It is the custom of the Royal Baking Powder Company to publish articles similar to the following. We believe it is the first time in the history of commerce that such an outrageous method of advertising has been attempted, much less permitted:

[Clipping from Journal, Coffeyville, Kans., December 29, 1899.]

#### A STRINGENT FOOD LAW—PROHIBITS THE USE OF ARSENIC OR ALUM IN ARTICLES OF DIET.

The law enacted by the Missouri legislature, a copy of which was recently published in our columns, and which prohibits the manufacture and sale of any article intended for food or to be used in the preparation of food which contains alum, arsenic, ammonia, etc., places that State in the lead in the matter of sanitary legislation.

<sup>1</sup>The only two deaths from poisoning by powder to which this sentence applies are apparently those of Barnett and Mrs. Adams, for which Molineux was convicted. The powders alleged to have been used were kutnow and bromo seltzer. These, of course, are not baking powders.



Laws restricting the use of alum in bread have been in force in England, Germany, and France for many years. In this country, in Minnesota, Wisconsin, Michigan, Ohio, Kentucky, and several other States, direct legislation in reference to the sale of alum baking powders has also been effected. In several of these States their sale is prohibited unless they are branded to show that they contain alum, and in the District of Columbia, under the laws of Congress, the sale of bread containing alum has been made illegal.

Following are the names of some of the brands of baking powders sold in this vicinity which are shown by recent analysis to contain alum. Housekeepers and grocers should cut the list out and keep it for reference:

*Baking powders containing alum.*

K. C.; contains alum. Manufactured by Jaques Manufacturing Company, Chicago.

Manhattan; contains alum. Manufactured by Hewson Chemical Company, Kansas City.

C. P.; contains alum. Manufactured by Allen Bros., Omaha.

German; contains alum. Manufactured by Consolidated Coffee Company, Omaha.

Calumet; contains alum. Manufactured by Calumet Baking Powder Company, Chicago, Ill.

Bon Bon Hotel; contains alum. Manufactured by Grant Chemical Company, Chicago, Ill.

Climax; contains alum. Manufactured by Climax Baking Powder Company, Indianapolis.

Kenton; contains alum. Manufactured by Potter-Parlin Company, Cincinnati.

Jack Frost; contains alum. Manufactured by Bain & Chapman Manufacturing Company, St. Louis.

Rocket; contains alum. Manufactured by Sherman Bros. & Co., Chicago.

Three Meals; contains alum. Manufactured by Redenous Baker Grocery Company, Kansas City.

In addition to these many grocers sell what they call their own private or special brands. These powders are put up for the grocer and his name put upon the labels by the manufacturers of alum powders. The manufacturers, it is said, find their efforts to market their goods in this way greatly aided by the ambition of the grocer to sell a powder with his own name upon the label, especially as he can make an abnormal profit upon it. Many grocers, doubtless, do not know that the powders they are thus pushing are alum powders, the sale of which would be a misdemeanor under the law referred to.

It is quite impossible to give the names of all the alum baking powders. They are constantly appearing in all sorts of disguises, under different names and at all kinds of prices, even as low as 5 and 10 cents a pound. They can be avoided, however, by the housekeeper who will bear in mind that all baking powders sold at 25 cents or less per pound are liable to contain alum, as pure cream of tartar powders can not be produced at anything like this price.

The following advertisement, after the complete annihilation by Judge Clark, of St. Louis, of the claims of the Royal Baking Powder Company that alum baking powder is harmful, is interesting because of this particular case. The paper is made to say that as the money paid for fines goes to the good-roads fund of the county, every citizen has an interest in the full enforcement of the law; "*first, that the highways of the State may be improved;*" and *second, "that the health of the community may be defended from alum baking powder."* This association confidently expects that the Royal Baking Powder Company is about to take up the good-roads movement and expend its energies on this instead of its philanthropic defense of the health of the people.

[Kansas City Times, April 10, 1900.]

ALUM BAKING POWDER LAW UPHELD.

Judge Clark rendered a decision on Saturday, in St. Louis, convicting Whitney Layton, of that city, on a charge of selling a baking powder containing alum, and fixed the fine at \$100.

The law of Missouri forbids the manufacture or sale within the State of alum baking powders. The money paid in fines goes to the good-roads fund of the county. Every citizen has an interest in the full enforcement of the law; first, that the high-



ways of the State may be improved; and second, that the health of the people may be defended from alum baking powders.

Grocers will escape prosecution by immediately throwing out of stock any cheap alum powders they may have. The constitutionality of the law having been established, the prosecuting authorities in each county will enforce the law, and there is already some competition to see which county will get the most money for its road fund. If prosecutions are promptly begun each county should collect thousands of dollars for good roads before summer. Grocers have had several months' warning already.

Any chemist can easily determine the presence of alum in baking powder, but as a suggestion, we print the names of some of the alum powders sold in the State, as follows: Pure Food, Jack Frost, Shepard's, Bon Bon, Hotel, Champion, Calumet, Forbes, Perfect, Eddy's, Mamma's, K. C., Liberty Bell, Manhattan.

The following quotations are a part of a series of advertisements which are running in the leading papers of the United States:

Alum is a corrosive poison, and all physicians condemn baking powders containing it.

Alum is a corrosive acid.

To cheapen the cost of an article of food at the expense of its healthfulness, as is done in alum baking powder is a crime.

Care must be used to avoid alum baking powders. In appearance they resemble pure powders, and they will raise the dough, but alum in food is poisonous, and even in small quantities will, if continuously taken, seriously injure the health.

Samples of mixtures made in imitation of baking powders but containing alum are frequently distributed from door to door or given away in grocery stores. Such mixtures are dangerous to use in food, and in many cities their sale is prohibited by law. Alum is a corrosive poison, and all physicians condemn baking powders containing it.

Alum is used in some baking powders because it is cheap. It costs but a few cents a pound, whereas the chief ingredient in a pure powder costs thirty. But alum is a corrosive poison which, taken in food, acts injuriously upon the stomach, liver, and kidneys.

Some baking powders are claimed to be cheaper. They can be cheaper only if made from cheaper materials. "Cheaper" means inferior. To cheapen the cost of an article of food at the expense of its healthfulness, as is done in alum baking powders, is a crime.

#### DOES YOUR BAKING POWDER CONTAIN ALUM?

Prof. George F. Barker, M. D., University of Pennsylvania: "All the constituents of alum remain (from alum baking powders) in the bread, and the alum itself is reproduced to all intents and purposes when the bread is dissolved by the gastric juice in the process of digestion. I regard the use of alum as highly injurious."

Dr. Alonzo Clark: "A substance (alum) which can derange the stomach should not be tolerated in baking powder."

Prof. W. G. Tucker, New York State chemist: "I believe it (alum) to be decidedly injurious when used as a constituent of food articles."

Prof. S. W. Johnson, Yale College: "I regard their (alum and alumina salts) introduction into baking powder as most dangerous to health."

In view of such testimony as this, every care must be exercised by the housewife to exclude the over and over condemned cheap alum baking powders from the food. Baking powders made from cream of tartar, which is highly refined grape acid, are promotive of health and more efficient. No other kind should be used in leavening food. Royal baking powder is the highest example of a pure cream of tartar powder.

The above advertisement of the Royal Baking Powder Company, published in the New York Sun on November 16, 1899, contains a quotation from Prof. S. W. Johnson, of Yale College:

I regard their (alum and soluble alumina salts) introduction into baking powders as most dangerous to health.

The following letter from Professor Johnson explains itself:

NEW HAVEN, CONN., February 2, 1900.

MR. A. C. MORRISON.

DEAR SIR: Yours of the 31st ultimo (misdirected to Hartford) is at hand. I am sorry that I can not send you copy of "the article on alum baking powders" written by me. I have no recollection of publishing anything on the subject nor, indeed, of writing on the subject at all.

Yours,

S. W. JOHNSON.



## MOST UNWARRANTABLE USE OF A NAME.

At the time that Senator William E. Mason, of Illinois, was taking testimony on the subject of pure foods as chairman of the Committee on Manufactures, the Royal Baking Powder Company most unwarrantably sent demonstrators from house to house, and the following clipping from the Sherman, Tex., Daily Democrat, of September 25, 1899, speaks for itself:

## INSPECTING BAKING POWDER—REPRESENTATIVES OF THE NATIONAL PURE FOOD ASSOCIATION IN SHERMAN.

M. Wemple, of New York City, representative of the National Pure Food Association, is in Sherman. Mr. Wemple has eight lady assistants with him, and their visit to this city is for the purpose of inspecting the baking powders used in Sherman homes. Mr. Wemple made the following statement this morning to a Democrat reporter: "The ladies will call at every house in Sherman, and, with the consent of the lady of the house, will inspect the baking powder used and show which powders contain alum and which are made of cream of tartar. We represent no baking powder firm nor do we use or recommend the use of any particular brand of powder. We simply desire to demonstrate which powders are pure and which are not."

These people have no authority whatever from the Government to make an examination of the baking powders used, but the ladies informed the reporter that they were seldom refused permission to make the inspection.

Below are statements and affidavits which give a clear idea of the scandalous misuse of the fact that the Committee on Manufactures was empowered by the Senate to investigate the subject of pure foods:

STATE OF ILLINOIS, *County of Will, ss:*

Mrs. T. Crone, being first duly sworn, on oath, according to law, deposes and says as follows: That on, to wit, the 10th day of August, 1899, she was visited at her house in the city of Joliet aforesaid by a certain lady, who under the pretense of exhibiting to affiant the difference between alum and cream of tartar baking powders and how they are made, and under the further pretense that she, the visitor, represented for that purpose the National Pure Food Association, under the supervision of Senator Mason, then and there made her demonstration, which was by taking from tin cans, labeled alum, cream of tartar, bicarbonate of soda, and corn starch, and made the alum and cream of tartar baking powders, as she described in her demonstration.

And affiant further represents that the said visitor being asked by affiant what company she represented, replied that she represented no company but the Pure Food Association, under the supervision of Billy Mason.

And affiant further says that after the said visitor made her aforesaid demonstration, she, the said visitor, then requested affiant to place her signature on a piece of paper, saying that she used this as a report to her manager in order to show that she had made her demonstration to so many people each day; and further affiant saith not.

Mrs. T. CRONE,  
211 Collins street, Joliet

Witness to signature:  
H. A. SPENCER.

STATE OF IOWA, *Scott County, ss:*

I, Minnie Nicolaus, Davenport, Iowa, being first duly sworn, on oath say that I am in the employ of the Pure Food Association of Iowa, or the National Pure Food Association, under the supervision of Senator Mason, of Chicago; that the nature of my employment is to demonstrate the make-up of baking powders by using powdered or burnt alum, soda, and cornstarch, thereby showing to various people of Davenport, Iowa, to whom I demonstrate, how to test baking powder, or to show them the difference between an alum baking powder and a cream of tartar baking powder.

MINNIE NICOLAUS.

Subscribed and sworn to before me by Minnie Nicolaus this 1st day of September, 1899.

WALDO BECKER,  
Notary Public, Scott County, Iowa.



GILMAN, ILL., November 25, 1899.

To whom it may concern:

We hereby certify that Mr. Mark Wemple instructed us to use the name of Senator William E. Mason in connection with the "Pure Food Commission," in order to enable us to gain admission to houses while employed by the Royal Baking Powder Company to condemn the use of all other baking powders.

AVA NEWMAN.  
E. L. STANLEY.  
MARY VESTAL.

The undersigned, William T. Biggs, being duly sworn, deposes and says he is a resident of Chicago, Cook County, Ill.; that in the latter part of July, 1899, he made application to the Royal Baking Powder Company, per request of the secretary of the Price Baking Powder Company, for a position as manager of a demonstrating crew, having previously held such positions with the Price and Cleveland companies for a period, collectively, of eleven years, and in response to said application he received the following letters:

[Royal Baking Powder Company (incorporated 1899); J. B. Rose, president; A. H. Porter, jr., vice president; John Morris, treasurer; W. L. Garey, secretary.]

100 WILLIAM STREET, New York, July 29, 1899.

DEAR SIR: Answering your letter of application for a position with us, will say, beginning August 1, 1899 (if you begin at that time), you are engaged at the rate of \$100 per month, to remain in our employ so long as your work is satisfactory to this company, and should we let you go will do so on three days' notice.

You will to a necessary extent be under the supervision of the Price Baking Powder Company and Mr. M. Wemple.

Yours, respectfully,

ROYAL BAKING POWDER CO.

Mr. WM. T. BIGGS

(Care of Mutual Phonograph Company),  
83 Dearborn street, Chicago, Ill.

[Price Baking Powder Company, Michigan street and Dearborn avenue.]

CHICAGO, July 31, 1899.

DEAR SIR: Will you kindly report to Mr. Mark Wemple, No. 615 Clinton street, Joliet, Ill., as soon as possible?

We expect you to be able to do so not later than Wednesday, 2d proximo. However, if you could do so to-morrow, it would be even better.

Respectfully, yours,

PRICE BAKING POWDER CO.

Mr. WM. T. BIGGS

(Care of Mutual Phonograph Co.),  
83 Dearborn street, City.

I reported to Mr. Wemple at Joliet, where he already had a crew of demonstrators organized and at work. He informed me that he had recently come from New York, where he had held long consultations with Messrs. Rose, Morris, and Porter, the head officials of the Royal Baking Powder Company, and that together they had formulated a plan of work, which he had already started in Joliet.

He said that they did not wish the public to know that the Royal Baking Powder Company was doing this work, on account of the prejudice against trusts, and that in order to obtain admittance to houses we were to have our demonstrators tell the housekeeper that "We are not representing any particular brand of baking powder, but are working under the auspices of the National Pure Food Commission, of which Senator William E. Mason is chairman."

Under no circumstances were we to allow our demonstrators to state for whom we were actually working, but to use the above argument in every case, and after showing the demonstration, in which either Royal or Dr. Price's was to be introduced incidentally as a pure baking powder, they were always to state before leaving, that "There are a number of pure baking powders, the most important of which are Royal, Dr. Price's, Thatcher's, and Cleveland's; if you use any one of them you are sure of getting pure goods." Thatcher's Baking Powder was the only one of the four outside the trust, and although this had been highly advertised at one time as pure goods, it was now dead as regards trade.

Confirmatory of this, after working a short time for them, I received the follow-



ing letter from the Royal Baking Powder Company, relative to the secrecy of the work:

[Royal Baking Powder Co. Incorporated 1899.]

100 WILLIAM STREET, New York, August 18, 1899.

DEAR SIR: We recently instructed Mr. Wemple as follows:

"We do not want the trade, neither jobber nor retailer, worked by your men in charge of house brigades. We do not want the trade to even know that house work is being done, and our regular salesman, who will look after the wants of the trade, will be instructed to make no mention of work being done at houses, etc."

Your report of the 15th instant would indicate that Mr. Wemple had not, in turn, instructed you, as we supposed he would. Therefore, you will follow above as our instructions to you, and oblige,

Yours, very truly,

ROYAL BAKING POWDER CO.

Mr. W. T. BIGGS, *Joliet, Ill.*

DISTRICT OF COLUMBIA, *County of Washington, ss:*

On the 21st day of April, 1900, personally appeared before me, a notary public in and for this said District of Columbia, the above-named Wm. T. Biggs, who being duly sworn subscribed to the same.

WM. T. BIGGS.

[SEAL.]

ROBERT S. DOWNS,

*Notary Public, District of Columbia.*

I, George C. Rew, being duly sworn, on oath depose and say that I am a baking-powder manufacturer, of the city of Chicago, State of Illinois; that in the course of business it was brought to my notice that numerous male and female employees of the Royal Baking Powder Company, known also as the Baking Powder Trust, were going from house to house making alleged tests, by which they were attempting to discredit alum baking powder and to show a superiority in favor of cream of tartar baking powders; that all of the cream of tartar baking powders on the market having a large and widely distributed sale are made by the Royal Baking Powder Company; that I caused to be made an investigation which resulted in the collection of the accompanying affidavits, which show that these employees of the Royal Baking Powder Company, known as the Baking Powder Trust, were representing themselves not as the employees of the Royal Baking Powder Company, but as employed variously by the Pure Food Commission of Iowa, by the National Pure Food Association, by the National Pure Food Commission under the direction of Senator Mason, of Illinois; that upon the collection of these affidavits I called upon Senator Mason at his office in Chicago and showed him these affidavits, and asked him if this use of his name was with his authority; that he said it was not; that I then asked him that he stop this unauthorized use of his name, whereupon he suggested that I cause the arrest of these parties, stating that he would appear against them; that I told him that the offense was committed against him, not me or the company I represented, and that it was a matter which he should take up with the Royal Baking Powder Company; that he then asked me how I wished him to proceed, and I suggested that he write the Royal Baking Powder Company, demanding that they at once discontinue this unauthorized use of his name, to which he agreed; that he then asked me where the Royal Baking Powder Company was located, and I stated, "New York City;" that he then asked me if he should address the company, and I suggested that he address the president; that he then asked the president's name, and I stated, "J. B. Rose," whereupon he called a stenographer and dictated a letter, which he later gave me to mail; that I waited in his office with him until the letter was transcribed and handed to him by the stenographer; that he quickly returned the letter to the stenographer, saying, "That is not the way I want that addressed; address it 'J. B. Rose,'" that the stenographer retired, and returning soon with the letter, said, "That was the way you always addressed Mr. Rose," and retired; that Mr. Mason, after reading and signing the letter, turned to me and said, "You know, Rew, if I were going to address to you a purely social communication, I would address you 'My Dear Rew;' if I were going to write you on a business matter, I would address you 'Mr. Geo. C. Rew,'" and I promptly agreed with him.

GEO. C. REW.

Subscribed and sworn to before me this 8th day of March, A. D. 1900.

ROBERT S. DOWNS,

*Notary Public, District of Columbia.*

The following affidavit states how it happened that Professor Prescott and Professor Vaughn, of the University of Michigan, gave evidence against alum baking powders:

I, George C. Rew, being duly sworn, on oath depose and say that I am a baking-



powder manufacturer of the city of Chicago, State of Illinois; that I was present at a hearing of the Pure Food Investigating Committee of the United States Senate, Senator William E. Mason, chairman, held in the Grand Pacific Hotel, in the city of Chicago; that often during this hearing I saw a Mr. McMurtrie, a chemist, said to be in the employ of the Royal Baking Powder Company, in company with Mr. Mason, in both his private room and in the room in which the hearings were held; that Professor Prescott and Professor Vaughn, both of the University of Michigan, gave evidence before Mr. Mason's committee, in which they condemned the use of alum baking powders; that when Professor Prescott was placed upon the stand Mr. Mason said: "Professor Prescott happened to be in the city at this time, and I took the liberty of subpoenaing him;" that later, in a conversation with Professor Neff, of the University of Chicago, he told me that Mr. McMurtrie had called upon him and asked him to appear before Mr. Mason's committee and testify against the healthfulness of alum baking powders; that he told Mr. McMurtrie he could not do so, because he did not wish to engage in commercial work; that Mr. McMurtrie further urged him to appear, saying that he had secured Professor Prescott and Professor Vaughn, of the University of Michigan, to testify that alum baking powders were injurious to health.

GEORGE C. REW.

Subscribed and sworn to before me this 8th day of March, A. D. 1900.

ROBERT S. DOWNS,  
*Notary Public, District of Columbia.*

Victor C. Vaughn and Albert B. Prescott testified as experts against the use of alum in baking powder, nominally for the State of Missouri, in the case of the State of Missouri v. Whitney Layton, but were really in the pay of the Royal Baking Powder Company.

Prof. John William Mallett, of the University of Virginia, in compliance with telegraphic instructions from Senator Mason, came to Washington from St. Louis, where he was attending the trial as a witness for the Royal Baking Powder Company in the suit above mentioned, expressly to testify on the subject of baking powders. The telegram which Senator Mason sent to Professor Mallett indicated that the Senator was cognizant of the paper written by Professor Mallett on the subject, and it was because of this that Professor Mallett brought a copy of that paper, which now appears as a part of Senator Mason's report (p. 550). Professor Mallett was particular to state that he did not represent any especial product or manufacturer whatever; that he was there as a disinterested witness. Having returned to St. Louis, in the trial Professor Mallett admitted under oath that the article which he submitted and which he brought with him was written in consultation with and was paid for by Mr. Hoagland, of the Royal Baking Powder Company.

DEPOSITION OF PETER T. AUSTIN, PH. D., CHEMICAL EXPERT OF NEW YORK CITY, CONCERNING "BAKING POWDER," MADE BEFORE THE JUDICIARY COMMITTEE OF THE LEGISLATURE OF THE STATE OF GEORGIA.

\* \* \* \* \*

Almost any substance will produce death if taken in large enough quantities, but that does not make it a poison. Animals and human beings can be killed by eating large quantities of cracked ice, salt, whisky, unripe fruit, meat, etc. Pure alcohol is a marked poison, but this does not deter men from drinking whisky and beer. Nicotine is an intensely strong poison, yet men smoke and live.

In moderate amounts, and, indeed, in quite large amounts, alum can not be classified as a poison. It is prescribed by physicians in doses from 10 to 20 grains, and Dr. Pereira advises 60 to 120 grains of alum in twenty-four hours for children suffering from looseness of the bowels and flatulency. In the form of powder it is often blown into the throat for treatment of relaxed membranes. The water of the Rock-bridge Alum Springs, of Virginia, can not be considered as a poison, or classed with arsenic, calomel, and bismuth. On the other hand, it would be a brave man who would drink a quart of yeast or would eat a pound of baking soda, or a pound of cream of tartar. And it would be an equally brave man who would attempt to class these substances with the deadly poisons, even though he could show a dog could



be killed by feeding it with saleratus, or a pig might explode if filled up with yeast. Alum is not a poison in the proper sense of the word.

(11) It is a popular idea, and one that has been diffused and strengthened by extensive, elaborate, and unscrupulously false advertising, that when alum is used in baking powder it passes into and remains in the bread as alum. This is not so. It was also formerly supposed by many that when alum was used to purify water, as is done in the filtering plant of Atlanta and other cities of Georgia, the alum passed into and remained in the filtered water. This nonsensical idea was long ago exploded, and to-day in Atlanta alone many tons of alum are put into the city water to purify it, but none remains in the filtered water.

When bicarbonate of soda, or baking soda, as it is often called, is mixed with burnt alum, which, by the way, is not what is meant when the word "alum" is used, and some inert substance like starch to give it bulk, a so-called "alum" baking powder is produced. When this powder is mixed with flour and water and the mixture is kneaded and baked the bicarbonate of soda and calcined alum enter into chemical reaction and carbonic-acid gas is liberated. This gas, which is the same gas that is formed during the raising of bread with yeast, disseminates through the dough, forming small bubbles, and thus leavens, lightens, and aerates the bread, making it palatable, and, by largely increasing the surface of the bread exposed to the digestive fluid, increases its digestibility. As a result of this chemical action the alum is entirely destroyed. Hence when a properly made alum baking powder is used in making bread not a trace of alum remains in the bread. It is therefore impossible to see what connection this bill has with the food products made by the use of an alum baking powder, for, even supposing that alum were a poison of a nature allowing it to be classed with a poison like arsenic, which it is not, of what practical use would this law be, or in what way would it benefit the public, if no trace of alum is left in the food product made by its use?

Alum has been used to whiten spoiled flour, and such use is reprehensible. Ingenious reading matter advertisements have been broadcasted, which attempt to make it appear that this use of alum is the same in effect as the use of an alum baking powder. Such statements are false.

The statement that no alum remains in the bread made from a properly prepared alum baking powder is substantiated by many chemists and authorities, as, for instance, George C. Rew, who states that "not one particle of alum will be left in the food." (U. S. Pure Food Com.)

Dr. Petracus: "There is no danger whatsoever of any alum being left in the bread." (Pharm. Rec., 1888.)

Dr. Lucius Pitkin: "There is no question of alum in an unchanged condition remaining in the baked breadstuffs."

George Heid: "The alum is entirely destroyed and entirely different chemical compounds are formed."

(12) The substances which are produced by the chemical action of bicarbonate of soda and calcined alum in raising bread are, besides the carbonic-acid gas, sulphate of soda and hydrate of alumina.

The sulphate of soda is a well-known substance, and the amount produced and left in the bread is too small to merit attention. In fact, no particular criticism has been leveled against it. The food known as "Grape Nuts," now extensively advertised, is claimed to contain a certain amount of it as a valuable constituent.

The other substances produced and left in the bread is hydrate of alumina. This is the same substance which is produced in the purification of water by alum, as carried on at Atlanta and other Georgia cities. It is stated to be insoluble in the digestive liquids, and passes from the body as inert matter. This view is held by the most recent authorities.

Dr. Petracus states "that the alumina is perfectly harmless. It is insoluble in the gastric juice of the stomach and passes out of the system with the solid excrement."

No proof has been adduced by any experiments that the residual products of alum baking powder which are left in the bread produce any harmful or deleterious effects.

Several statements have been made that have not been proved by experiment. For instance, it has been said that alum baking powder renders the gluten of the bread insoluble, and hence makes it less digestible and less nutritious. This is not an established fact. It has been said that in a bread made with an alum baking powder a certain amount of phosphates was rendered insoluble and incapable of assimilation. This is also a statement unsupported by facts. Experiments have been made on the solubility of alumina and phosphate of alumina with artificial digestive liquids with varying results, but no real physiological experiments have been made on living subjects that prove the statements.

According to Dr. Francis Sutton, F. C. S., F. C. I., public analyst for Norfolk and other places, consulting chemist to the Norfolk Chamber of Agriculture, author of



standard text-books on analytical chemistry, an eminent English authority, all kinds of flour contain a small amount of alumina. Hence in analyzing a bread made with alum baking powder it would be necessary to determine how much of the alumina came from the flour and how much came from the baking powder. If alumina is contained in the flour it can not be considered a very harmful substance, although by adroit argument it might be possible, under this bill, to prove that as flour contains one of the principal constituents of alum it should be classed with arsenic, among the poisons. Thus the selling of flour to be used in the preparation of food might become a crime. Dr. Sutton states that alumina is an earthy matter and a constituent of all clays, and that in his opinion it is not injurious to health. Dr. Pereira recommends it in large quantities for acidity of the stomach. Dr. Sutton also states that he does not think that there is anything injurious to health in a certain prominent English alum baking powder, and that he has held this opinion for seven years. He bases his opinion upon experimental physiological investigations on animals, as well as the use of alum baking powder in his own family.

Dr. J. L. W. Thudicum, F. C. P., Lond., F. C. S., well known as an authority in physiological chemistry, states: "I have been frequently consulted on these questions by the board of health. In my opinion there is nothing injurious in the use of this (alum) baking powder. It is perfectly harmless."

Dr. Petraeus, testifying before the United States Pure Food Commission, stated that he considers alum baking powder not deleterious to public health, and bases this statement on the knowledge he has found himself and upon experiments.

A. Wynter Blythe, in *Foods: Their Composition and Analysis*, a standard authority, states that "the writer (himself) and the writer's family have used, off and on, alum baking powders for years without injury. The fact that tons of alum baking powders are sold every week must show that a vast number of persons use alum baking powders, and yet no special malady has been recorded. \* \* \* I am therefore decidedly of the opinion that alum in food in reasonable quantities is not injurious to health."

Dr. B. Ward Richardson, the eminent English sanitarian, is of the opinion that the use of alum baking powder is not prejudicial to health.

Dr. Beverly, assistant surgeon to the Norfolk (England) and Norwich Hospital, states that there is nothing in alum baking powder, used as directed, injurious for food. He has used such bread himself, and has taken twenty grains of alumina without observing any effect.

Dr. C. M. Tidy, professor of chemistry and forensic medicine at the London Hospital, late deputy medical officer for the city of London, an eminent English authority, states that he can not see anything in the use of this (alum) baking powder which can be injurious to health.

Professor Patrick, of the University of Kansas, as a result of experimental investigations on animals, made in 1889, states that it "seems to be established as well by experiment as by reason that a properly made alum baking powder used in making bread or biscuit is perfectly harmless to the human system."

One of the latest statements about the entire harmlessness of bread made with alum baking powder has been made by Dr. Henry Froehling, of Richmond, Va., dated July 24, 1899, in answer to a request from the Hon. G. W. Koiner, commissioner of agriculture of Virginia. The request was as follows: "There has been considerable discussion and inquiry about the comparative healthfulness of baking powders containing alum and those containing cream of tartar, and to encourage and foster manufacturing enterprise in Virginia, there being a large amount of money invested in this State in the manufacture of these baking powders, giving employment to hundreds of people, this department considered it to the public interest to investigate this matter. To ascertain the facts, I have had samples of baking powders made of alum, of Virginia manufacture, analyzed by one of our ablest analytical chemists of the country, Dr. Henry Froehling, of Virginia. His report, which follows, shows that our Virginia-made baking powders are as healthful as other brands of baking powder costing four or five times as much."

Dr. Froehling concludes his report as follows: "From my experiments, carefully made, a well-compounded baking powder with alum as an ingredient, in the recognized proportions, is as harmless as the best cream of tartar powder; indeed, it is less harmful, as the cream of tartar powder leaves in the bread a large residue of tartrate of potash and soda (Rochelle salts).

"I find that well-compounded baking powders with alum as an ingredient give a leavening effect fully equal to the high-priced baking powders costing four or five times as much."

This report certainly disposes of any doubts as to the harmlessness and healthfulness of food products made with a properly prepared alum baking powder. \* \* \*

There can not possibly be a doubt in the mind of any well-informed man as to the harmlessness or healthfulness of food products made with properly prepared alum baking powders. If alum baking powders were really poisonous it would certainly be fair to infer that the inhabitants of Georgia, who use little else than alum baking powders, ought to show some deleterious effects.



The chemistry of the action of a cream of tartar baking powder is as follows: Cream of tartar is made from argol, which is a substance deposited from grape juice during its fermentation and conversion into wine. It is a side product of the manufacture of wine, and as alcohol is formed by fermentation of the grape juice, the argol, being insoluble in alcohol, is precipitated. It is purified and appears as white cream of tartar, or what is termed chemically acid tartrate of potash. The profitable disposal of argol is an important point in the business of wine making. A part of the argol is imported from France and other wine-producing countries, and a part is made in our own wine-producing States. When cream of tartar is mixed with bicarbonate of soda and a neutral filler, such as starch, a cream of tartar baking powder is produced. When this powder is mixed with flour and water, kneaded and baked, a chemical action takes place which sets free carbonic acid gas, which leavens the bread, and as a side product the tartrate of potash and soda, or Rochelle salts, is formed, and is left in the bread.

It is to be observed that in making bread with cream of tartar powder no cream of tartar is left in the bread; it is all destroyed and converted into Rochelle salts. Hence all arguments about the healthful nature of cream of tartar, a natural constituent of grapes, and the consequent healthfulness of a bread made with a tartar powder, are as fallacious as the statement that alum exists in bread made with an alum powder. If any legislation at all is required concerning the use of baking powders it should be directed, not at what is put into the bread in making it, but at what is left in the bread after it is made. What the people eat is not what is put into the bread during its preparation, but what is left in it when made. Any other legislation than this can not in any way protect the public as far as baking powders are concerned.

Rochelle salts are probably known to everyone. It is an old-fashioned medication, once very commonly used, now not so much. This, according to Dr. Francis Wyatt, is on account of its action on the kidneys and bowels. In Bulletin No. 13, on Food and Adulterants, published by the United States Department of Agriculture, and giving the results of investigations made under the direction of Dr. Wiley, chief chemist, the writer states: "I doubt if many persons understand that when they use tartrate powders, which are considered to be the best class, or at least, one of the best classes of such powders, they introduce into the breadstuffs very nearly an equal weight of the active ingredient of Seidlitz powders, and in a loaf made from it they consume more than the equivalent of one such powder." It is also stated that the dose of Seidlitz powder as a purgative is one-half to 1 ounce.

As a matter of fact, the directions given for the use of tartar powders often calls for three teaspoonfuls of the powder to a quart of flour, so that the loaf of bread will contain the equivalent of two Seidlitz powders or more. How much more than three teaspoonfuls of the baking powder the generous nature of the average cook may impel her to work into a loaf of bread it is not easy to say. Nor in the minds of many cooks is there a marked difference between teaspoonful and desertspoonful, and an extra spoonful for good luck is not unknown.

Whether or not the daily consumption of Rochelle salt is harmful or not is a question which must be decided, as stated in this bulletin, by physiological experiments. Such experiments should be made on human beings, and not with residues from baking powders, but with foodstuffs actually prepared with the various baking powders under standard conditions.

Professor Mallet made some experiments with a substance which he claimed to be identical with the residue left in food prepared with alum baking powder, and concluded that it was harmful, but it is stated in the United States bulletin that his physiological work did not justify his conclusions.

Again, in this bulletin it is stated with great justice: "The active competition between makers of different brands of baking powders, and the methods used by them in advertising their goods, have made readers of newspapers and magazines familiar with all sorts of parti-colored statements about baking powders in general and certain classes and brands in particular, and, unfortunately, such matter is not always confined to advertising columns."

Mr. G. C. Rew (United States Pure Food Commission) says: "There is a violent prejudice in the public mind against alum baking powders. This prejudice has been created and has been kept alive by the kind of advertising resorted to by some baking-powder manufacturers."

Professor Delafontaine (United States Pure Food Commission) says: "The great outcry against this or that kind of powder is more for advertising purposes than really in the interest of public health."

Concerning a bill lately introduced in the Pennsylvania legislature to "Regulate the manufacture and sale of alum baking powders, etc.," State Dairy and Food Commissioner Levy Wells writes as follows: "The alum baking powder bill is evidently in the interest of the cream of tartar people."



Not a few authorities have expressed themselves emphatically about the use of food stuffs containing Rochelle salt.

Prof. William Jage ("Chemistry of Wheat, Flour, and Bread," p. 331): "The resultant, Rochelle salt, has aperient action; hence their continual use is to be deprecated."

Professor Von Fehling ("Handwörterbuch der Chemie," Vol. II, p. 230): "We must bear in mind that the daily partaking of Rochelle salt can be sanctioned only in rare cases."

Dr. James T. Nichols ("Chemistry of Farm and Sea," p. 107): "This salt (Rochelle) has aperient properties; in fact is a medicine, and thus at daily meal those who eat bread made with powders are taking food and medicine together. Such bread is never placed on my table."

Dr. Witthaus, the eminent chemist and toxicologist, in his "General Medical Chemistry:" "There is more danger to be apprehended from the tendency of repeated small doses of Rochelle salt, resulting from the use of cream of tartar baking powders, to render the urine alkaline, and thus favor the formation of phosphatic calculi, than from any supposed deleterious action of alumina, whose local action, even in considerable doses, is that of a very mild astringent, and whose absorption is very doubtful."

Other statements as to the injurious effect of the daily consumption of bread made with tartar baking powders, have been made with great emphasis by well-known physicians.

Their statements may be found in the issues of the New York World of July 8 and 26, 1888.

There is no evidence based on accurate scientific experiment and investigation to prove that bread made with an alum baking powder is less wholesome than that made with a tartar powder. So far as its use in baking powder is concerned, cream of tartar can be considered as much of a poison as alum. How, therefore, can a law be just and fair which includes one and excludes the other?

#### UNIMPEACHABLE TESTIMONY.

In the case of the State of Missouri *v.* Layton, tried before Judge Clark in January, 1900, the following questions were asked of the famous physiologist, Dr. Austin Flint. His answer is also given:

"In your experience as a physician who has given much attention to the subject of indigestion, have you ever had a patient whose diseased condition of the digestive system, in your opinion, could be attributed either wholly or in part to the use of alum baking powder in the food?

"Or have you in your experience as a physician ever been led to attribute any functional disorder or diseased condition to the use of alum baking powder in food?"

"In answer to both of the above questions, I reply that I have not.

"AUSTIN FLINT."

These questions were submitted to the physicians of Richmond, Va., where 95 per cent of the baking powder used contains alum as an ingredient. All coincided with the opinion expressed by Dr. Flint in the Missouri case.

"I coincide in Dr. Flint's opinion.

O. F. Blankingship, M. D., Wm. H. Parker, M. D., B. L. Hillsman, M. D., Raman D. Garvin, M. D., W. S. Beazley, M. D., C. W. Massie, M. D., J. W. Williams, M. D., H. H. Levy, M. D., Lewis C. Boshier, M. D., Robt. F. Williams, M. D., E. C. Levy, M. D., J. Page Massie, M. D., J. N. Upshur, M. D., Jas. M. Whitfield, M. D., J. S. Wellford, M. D., Francis W. Upshur, M. D., R. Angus Nichols, M. D., Daniel J. Coleman, M. D., D. A. Kuyk, M. D., Chas. R. Robins, M. D., Hunter McGuire, M. D., Stewart McGuire, M. D., Paulas A. Irving, M. D., Hugh M. Taylor, M. D., Virginius Harrison, M. D., Benjamin Harrison, M. D., J. A. White, Landon B. Edwards, J. A. Hodges, William R. Jones, J. William Winfree, D. Meade Mann, M. D., C. A. Blanton, M. D., George Ben Johnston, M. D., Christopher Tompkins, M. D., Jno. P. Davidson, M. D., J. B. McCaw, M. D., Geo. Ross, M. D., B. W. Rawls, M. D., J. P. Harrison, M. D., Edward McCarthy, M. D., Clifton M. Miller, M. D., John R. Wheat, M. D., J. Fulmer Bright, M. D., F. H. Beadles, M. D., Dorsey L. Morris, M. D., J. Richard Williams, M. D., B. L. Taliaferro, M. D., Geo. H. Bright, M. D., J. A. Hillsman, M. D.



## EXPERIMENTAL PROOFS.

By means of adroit and persistent advertising, inserted as reading matter in newspapers and magazines, the Royal Baking Powder Company has endeavored for several years, and at great expense, to confuse in the public mind two totally distinct issues, viz, the physiological effects of large doses of ordinary crystallized alum with the effects of bread made with a baking powder containing pure exsiccated alum. Such a bread, it is needless to repeat, does not contain free alum, for the small amount of exsiccated alum used in the baking powder is destroyed during the raising.

In the Missouri case (*State of Missouri v. Whitney Layton*) a number of distinguished chemists was employed by the Royal Baking Powder Company to testify as strongly as they dared against the use of alum in baking powders. But concerning the only important issue in the whole case, viz, whether bread made with alum baking powder was wholesome or not, they could find nothing to say in the negative. They could not even swear that bread made with alum baking powder contained a trace of free alum. As Judge Clark well said in his summing up:

It was not proven in evidence that there were any instances in the use of alum baking powders which resulted in the leaving in the food product any free alum—that is, in its original form.

The voluminous expert evidence for the prosecution was disposed of in the following brief and pointed sentence by Judge Clark:

Upon cross-examination the experts, testifying for the prosecution, admitted that in all their experience, and in all their reading and information that they possessed on the subject, they had never themselves come in contact with nor could they obtain any information or any knowledge of any recorded instances in which functional disorders or disease or impairment of the digestion and general health had resulted to any human being from the use of alum baking powder as an ingredient in the preparation of food.

Concerning the absurdity of considering a substance poisonous which is consumed by the public to the extent of a hundred million pounds a year without a record of a single case of ill effects arising from its use, Judge Clark expresses himself in the following sensible and practical manner:

In the mind of the court this fact, considering the enormous proportions to which the alum baking powder industry has grown in this country, and the length of time in which such baking powders have been in use, stands as a stone wall against the deductions of the most eminent scientists who presented their theories on the part of the prosecution. I am unable to find in the evidence in this case any just ground for a ruling that alum baking powders of themselves, when used in the preparation of food, are in any wise less wholesome than any other variety of baking powders.

The experiments alluded to by Judge Clark as presented by defendant were made under consultation with Professor Flint, one of the greatest physiologists living, by Dr. E. E. Smith, formerly instructor at Yale, and who is recognized as an expert in experimental physiological chemistry.

These experiments were the first made on human beings with the use of the most modern method of chemico-physiological science. As Prof. Austin Flint stated in his testimony in the *State of Missouri v. Whitney Layton*, the plan of these experiments was to determine by feeding human beings on bread made with alum baking powder—first, the quality and quantity as regards activity of the gastric juice; second, the completeness and rapidity of stomach digestion; third, the



completeness of the absorption of digestive materials and the proportion of the constituents of the bread prepared by digestion for absorption; fourth, the influence of this diet, composed largely of the bread, upon what is known as metabolism. All of these experiments were to be made in comparison with identical experiments made with a bread which is recognized as being an absolutely normal bread.

These experiments were carried on for several months and involved many analyses of the substances fed to the human subjects, who were normal men, and of their feces, urine, and stomach contents. No appreciable difference could be found between the effects of the bread made with alum baking powder and the normal bread.

The following from the Missouri case effectually dispel all doubts as to the healthfulness of food prepared with alum baking powder:

#### TESTIMONY OF DR. ERNEST E. SMITH.

Q. What is your conclusion as to the wholesomeness, as a daily diet consumed by man, of a bread properly cooked with alum baking powder properly prepared?—A. That it is perfectly wholesome.

#### FROM THE TESTIMONY OF PROF. AUSTIN FLINT.

Q. Assuming the truth of Dr. Smith's testimony, state whether or not, in your opinion, these experiments have been properly carried out and with scientific precaution?—A. In my opinion, the experiments, as I followed them in their progress and as I have heard them testified to here, were carried out properly, accurately, and in every way are entitled to confidence.

Q. Now, assuming the truth of Dr. Smith's testimony, please state what, in your opinion, as to the wholesomeness of the bread that he has so called the Layton bread, which he described as prepared with the so-called Layton powder, as a diet for man?—A. Assuming Dr. Smith's testimony as to the facts to be true, and looking at the question from what I believe is a purely disinterested scientific point of view, I should regard the bread designated as the Layton bread unquestionably as a wholesome bread used as an article of food for man.

Q. State what, in your opinion, is the value, with reference to wholesomeness, of this bread to all classes of consumers—those of strong digestion or weak digestion.—A. I should regard it as not differing from any other bread, the selection of bread being largely a matter of individual taste.

Q. In other words, do you consider it a wholesome bread in every respect as a diet for mankind?—A. I do, if properly and carefully made.

Q. You say the same thing of all other breads?—A. I would say the same thing of all other breads.

#### SOME OPINIONS IN FAVOR OF THE USE OF ALUM IN BAKING POWDERS.

[From the decision of Recorder J. R. Bulwer, esq., Q. C., M. P., in the Norfolk (England) alum baking powder case.]

I decide this case upon its merits and upon the evidence. After the evidence we have just heard I do not think that bread made with this baking powder becomes an article of food injurious to health, and, as a matter of fact, I find in favor of the appellants.

[From an address by Hon. Levi Wells, State dairy and pure-food commissioner of Pennsylvania, delivered at the national meeting of dairy and food commissioners held at Chicago, Ill., October, 1899.]

There is, perhaps, no one article of food that there has been more deception practiced in than that of baking powder, nor one by which the people have been fleeced out of more money, and it has been done in a very peculiar way. \* \* \* I am not here to advocate the use of any particular kind of powder, but I would like to disabuse the public mind in the belief that only certain kinds can safely be used. I would also like to explode the fallacy that any powder is perfectly pure, for they are all somewhat objectionable, not from the fact that the ingredients themselves are harmful in any particular way, but that after the carbonic acid gas is generated and the results are obtained for which powders are used, there is left in the food a



resultant salts that is objectionable as a food product, whether it be Rochelle salts, as is the case in cream of tartar powders, or whether it be something else, the result of an alum or an alum-phosphate powder.

Through skillful advertising and a vast amount of deceptive literature circulated through the press the cream of tartar powder people have led the public to believe that only these powders are safe to use. The price to consumers of these powders is from 45 to 50 cents. The amount of powders consumed in the United States is from 60,000,000 to 100,000,000 pounds a year, and the profit of these people, if they had the entire trade of the country, would not be less than \$20,000,000 annually. This business is controlled by a trust said to be capitalized at \$20,000,000.

Which is the least harmful of these various preparations I am not prepared to say, but I do not hesitate to express my belief that, so far as healthfulness is concerned, the cheaper alum and alum-phosphate powders are no more objectionable than are the cream of tartar powders.

[New York State legislature appropriates \$10,000 for the investigation of food products. Summary from the report of the State board of health on the use of alum in bread raising as a result of such investigation under the direction of Prof. Charles F. Chandler, Ph. D., 1882, p. 573.]

In conclusion, it may be said that, at the present time, there does not seem sufficient evidence as to the injurious effects of alum upon the human system to warrant legislation against it. That alum as used ordinarily in bread making is unattended by any immediately injurious results seems reasonably certain, but further and more exhaustive experiments are necessary before the question can be satisfactorily settled regarding its action upon the human system, especially in cases of weak digestive organs. Experiments should be made upon subjects in ordinary health. To prohibit the use of alum on the ground that it is injurious to dyspeptics would be to subject it to a very severe test—a test which many articles of food of daily consumption could not stand successfully. Such a standard could be adopted only upon the ground that bread and like preparations were too important as articles of diet to have their value in any way impaired. Less objection is, at present, made to the use of alum than was the case several years ago, and still further experiment might show that even this objection was without foundation.

[Dr. Charles B. Parker, professor of physiology in medical department, Western Reserve University, and physician of fifteen years' practice.]

I do not consider alum and the other ingredients used in the proportion as in "Sun" baking powder, and the process of digestion, as injurious to health, nor have we even the right to assume or assert that they are.

[Dr. J. P. Sawyer, professor in medical department, Western Reserve University, and practicing physician.]

I haven't any reason for thinking that the ingredients used in the "Sun" (alum) baking powder would be injurious to health.

The idea has originated and come to be generally accepted as a foolish and popular one that alum is injurious, and because somebody did not believe it, has given rise to much discussion on the subject, and experiments are being made and physicians are not believing as much as they did that alum might be injurious.

[Dr. Tuckerman, No. 298 Central avenue, Cleveland, physician of fifteen years' practice.]

I do not consider alum, taken in moderate quantities in the way in which such a baking powder would be used in a household with other foods, would be injurious to the health. I never heard of anybody being hurt by the use of alum baking powder.

[Dr. J. R. Smith, physician, Cleveland.]

I have never heard of anybody being hurt by the use of "Sun" baking powder, or of anybody being injured by the use of alum baking powders. In my opinion, these baking powders are absolutely harmless.

[Dr. Henry W. Rogers, professor materia medica and therapeutics, Western Reserve University, and practicing physician.]

I never heard of anyone being injured by the use of alum baking powders. The moderate use of alum does not impair the functions of the stomach, used according to directions of baking powders. My idea is that it stimulates the secretion, which is much to be desired, as a rule, in moderation, and helps the bowels to discharge all foreign and insoluble matters through the alimentary canal.



[Dr. Nathan Wiebenthal, lecturer in Brownell Street University, and physician of twelve years' practice.]

I do not consider that a baking powder, containing the ingredients of the Sun baking powder and the quantity stated, would be injurious to health, nor have I heard of anyone being injured by the use of alum in baking powders.

[From annual report of the Pennsylvania department of agriculture, submitted to Hon. Daniel Hastings, governor. Bulletin No. 20, 1896, p. 76, on Baking Powder.]

This is an article that is in almost daily use in every household of the State, and is also an article in the sale of which very much deception has been practiced by skillful advertising, claiming for certain kinds absolute purity, 99 per cent pure, etc., and in various ways prejudicing the people and leading them to believe it was dangerous to use other brands that were upon the market for less money. Millions of dollars have been spent in advertising these high-priced powders. The people have bought them, supposing it unsafe to use low-priced powders. \* \* \*

A perfect baking powder would be one that, when chemical action takes place, would all be converted into carbonic gas and pass off in this form, thereby performing the mechanical action desired, and making the baking light with no residue left. None of the powders, however, on the market are capable of fully and perfectly performing this work without a residue being left in the food product into which it enters. Hence, calling any baking powder "absolutely pure" is misleading. The nature of this residue, which really is the only objectionable feature about any brand of baking powder, differs according to the acid used in the various preparations. \* \* \*

A careful study of the question leads to the conclusion that a properly compounded alum powder will perform all the desired requirements, and is no more harmful than the powders costing four or five times as much.

[Prof. R. Ogden Doremus, professor of chemistry and toxicology in Bellevue Hospital Medical College, of New York, and Prof. Charles A. Doremus, professor of chemistry and toxicology in the University of Buffalo, medical department, in a report of elaborate experiments on digestion.]

Alum and hydrate of alumina produce scarcely any more retarding effect on the digestion than common salt, and by no means as great a retarding action as did the Rochelle salts (from a cream of tartar baking powder).

Further experiments on human subjects, by feeding large quantities of hydrate and phosphate of alumina at meal times, prove no ill effects, either in the nature of pains, indigestion, or constipation, the fecal discharges being natural and as regular as usual. \* \* \* All baking powders leave residues in the bread. \* \* \*

As to quantities, alum baking powder leaves the least. \* \* \* Baking powders (cream of tartar) which leave residues of potash, according to a prevailing sentiment among medical men, are more objectionable, leaving a double tetratrate of potash and soda or Rochelle salts. \* \* \* One of the best physiological proofs that the residues of alum powders are not injurious is that many intelligent families, aware of the composition of these powders, have used them for many years without injurious effect. \* \* \* Even the salt of alumina is in constant use as a domestic medicine; it is largely employed in the arts without toxic effect resulting, and the alum springs of Virginia, also of Europe, are favorite resorts for hygienic purposes. Considered in the light of the amount of gas given off, by equal weights of powder, alum baking powder outranks the best of competitors.

[Professor S. Illiman, of Yale College.]

I have prepared bread and other articles of food with alum baking powder; have analyzed the bread, and it does not contain a trace of alum.

[S. H. Hurst, Ohio dairy and food commissioner, annual report of 1887.]

The official investigations of this class of baking powders (alum), made in England to test their healthfulness, resulted in their favor.

[Prof. G. E. Patrick, professor of chemistry in the University of Kansas, in the Scientific American Supplement, No. 185.]

The question as to whether the hydrate of alumina (resultant of an alum baking powder) might be dissolved in the gastric juice is important, for, if dissolved, it might produce in some slight degree the effects ascribed to alum; but if it is not dissolved, such effects are impossible, and alum used as an ingredient of baking powder may be considered harmless. \* \* \* With the view of settling the question beyond all dispute, I have, during the last two months, carried on a series of experiments. \* \* \* The conclusion to which all these experiments lead is obvious. \* \* \* It seems to me established, as well by experiments as by reason,



that a properly made alum baking powder, used in making bread or biscuits, is perfectly harmless to the human system. \* \* \* In closing, allow me to say, in order to prevent all suspicion, that this investigation was undertaken for the sole purpose of finding out the facts in this matter—one of so great importance to us all; that no party or parties interested in the sale or manufacture of baking powder had any knowledge of the investigation, and that I have received no remuneration for it or for this article.

[George Holland, M. D., in *Pharmaceutical Record*, April 1, 1887.]

Though the so-called alum baking powders are to-day used in larger quantities than cream of tartar baking powders, there still exists in the minds of some persons a prejudice against them—a prejudice having no reasonable grounds for its existence. \* \* \* The experiments of Francis Sutton (Norfolk, England, baking powder case), one of the most skillful analysts of the day, and of Professor Patrick, of the University of Kansas, furnish positive proof that the very small amount of hydrate of alumina left in the bread by the use of alum baking powder is not dissolved by the gastric juice in the stomach of living animals, and is therefore harmless. Moreover, as bread made from an alum baking powder contains less of saline and other residual matters than a cream of tartar baking powder, if there be any difference on that score it is in favor of alum baking powders.

[From *Pharmaceutical Record*, June 1, 1888, by C. V. Petraeus.]

An alum baking powder does not deteriorate in a package like a cream of tartar baking powder—its keeping quality is far above the latter. \* \* \* Alum sets free the gas from bicarbonate of soda, slowly, and with greater regularity than cream of tartar, and therefore does much better and more effective work. \* \* \* Alum itself in small quantities can not be called injurious to the human system, for in alum factories workmen have inhaled the dust, day by day, for years, without suffering the slightest ill effects. But the use of alum in a baking powder must not be confounded with the use of alum for “improving” flour. In the one case alum remains in the bread as alum just as it is put in the flour, but when mixed with bicarbonate of soda, as in baking powder, it is entirely decomposed. The most careful experiments, by men thoroughly qualified for such work, prove that the alumina resulting from the use of alum baking powders is absolutely without action upon the stomach and intestines. \* \* \* As these powders cost less than cream of tartar baking powders, they not only save the customers’ pocketbook, but, what is far better, they save their precious health. Let the intelligent consumer investigate for himself, and have no fear of using alum baking powders. He will find that they are the best, not only because a given quantity will raise more bread than the same quantity of cream of tartar baking powder, but because of the small quantity and innocent character of the residue they leave in the bread.

[Letter from Dr. Hunter McGuire.]

RICHMOND, January 4, 1900.

HON. CONWAY SANDS, *Chairman Committee*.

MY DEAR MR. SANDS: I have carefully examined the testimony of Professor Austen before the committee of the Georgia legislature, and I fully concur with him in the opinion that there is nothing deleterious in the alum powders. I am so convinced of this that I permit these powders to be used in my own home and in my hospital. In my opinion the legislation to suppress these powders will be only beneficial to some monopoly which makes other powders of a different material.

Very truly, yours,

HUNTER MCGUIRE.

#### OCCURRENCE OF COMPOUNDS OF ALUMINUM IN NATURE.

Advocates of cream of tartar baking powders state that salts of alumina are not found in plants or articles of food, but such statements are false. Kayser states that many wines contain alumina in solution, which has been dissolved during their manufacture. L'Hôte also finds this to be the case. He also proved that both red grapes and their stalks contain soluble salts of alumina. The occurrence of alumina compounds in flour is so common that Wanklyn advises analysts to allow for it. Parmentier finds alumina salts in many spring waters. Yoshida proves that alumina compounds exist in peas, beans, rye,



wheat, barley, millet, and buckwheat. Mushrooms, lichens, fungi, and mosses often contain considerable amounts of salts of alumina. In one moss (*Lycopodium complanatum*) acetate of alumina occurs in such quantities that a lye made from the plant can be used directly as a mordant in dyeing.

The mountain raspberry has been found to contain an unusual amount of alumina salts. Drs. Harrington and Kinnicutt find alumina in the ash of human and cow's milk. Professor McMurtrie found large amounts of alumina in the excrement of bats. Alumina exists in combination in clay and soil. It is breathed in the form of dust, and swallowed in many ways. Grazing animals eat a good deal of dirt, as do many other animals. According to the enemies of alum baking powders the compounds of alumina thus taken into the stomach ought to be dissolved and produce horrible effects. But animals as well as human beings have been taking alumina compounds with their food in this way for many years before baking powders were invented without showing any bad effects.

#### THE BAKING POWDER CASE.

STATE OF MISSOURI *v.* WHITNEY LAYTON.

#### OPINION OF THE COURT.

[Decision rendered by Judge Clark, St. Louis, Mo., March 31, 1900.]

Defendant is prosecuted, on information, charged with violation of the act of the legislature approved May 11, 1899, Session Acts of Missouri, 1899, page 170, and carried into the Revision of 1899, section 2286. This article makes it unlawful for any person or corporation doing business in this State to manufacture and sell or offer for sale any article or compound or preparation for the purpose of being used, or which is intended to be used, in the preparation of food in which preparation or compound there is contained any arsenic, calomel, bismuth, ammonia, or alum.

Upon the agreed statement of facts in this case and the evidence before the court it appears that the defendant engaged in the manufacture and sale of baking powder, in which baking powder alum was used as an ingredient. Defendant admits the manufacture and sale of the baking powder, and seeks justification upon the ground that baking powders prepared after the formula used by him had been in use for many years; that trade in such baking powders had reached enormous proportions; that such baking powder has become a recognized article in trade and commerce; that such baking powders are harmless in their nature and in nowise deleterious to health; that by reason of these facts the statute in question, so far as it is applicable to the baking-powder trade, is unconstitutional, and is an unlawful invasion of the rights of property and is class legislation. Upon the trial the court admitted, subject to objection, testimony as to the respective merits of the various kinds of baking powders, the extent of the trade, the nature and character of the substances composing baking powders, and their properties and effects upon the consumers of food prepared with the baking powders.

Defendant introduced evidence tending to show that the alum baking-powder industry had existed in the United States for more than twenty-five years, and had reached such proportions that the annual output and consumption of alum baking powders in this country as the trade now exists was equal to 100,000,000 pounds per annum, existing



in the proportion of about five to one of other kinds of baking powder consumed by the people. Defendant also introduced in evidence testimony of a number of witnesses who had used alum baking powders for a greater or shorter length of time, some witnesses testifying to an experience in that direction extending over twenty years and embracing the supplying of food prepared with alum baking powders to a great number of persons. Defendant also introduced the testimony of a number of persons who had used alum baking powders in their own private families for various periods of time, extending over various terms of years, and the testimony of all of these witnesses united in declaring that no harmful or deleterious effects upon the consumers had been observed as the result of the use of alum baking powders in the preparation of food.

Defendant offered in evidence also testimony as to certain experiments which had been made under the auspices of experts and conducted with a view of determining the value of alum baking powders as an ingredient in the preparation of food, and as to whether or not such baking powders would be liable to produce any harmful effects upon the consumers. The effects and properties of such powders and the results of those experiments are reported in the testimony and tend to sustain the contention of the defendant that alum baking powder is wholesome and harmless as an ingredient in the preparation of food.

Defendant also presented in evidence the results of certain experiments performed by expert chemists with a view of developing the constituents of various alum baking powders and the resultant products from their use as a constituent of food, and whether or not there remained in the food prepared by the use of alum baking powder any substances which might be regarded as deleterious in character. In that connection defendant also offered testimony of eminent medical and physiological experts whose opinions were that alum baking powders used in the preparation of food were wholesome and harmless, and had been proven so by the experience of many years in their use.

Defendant also offered in evidence testimony tending to show that, notwithstanding the enormous proportions to which the alum baking powder industry had grown in this country, and the length of time in which such products had been placed upon the market and used in the preparation of food, there, nevertheless, existed no recorded instance in which any disease or derangement of the digestive functions or powers of any kind could be traced to the use of such baking powders as an ingredient in the preparation of food.

Defendant offered in evidence, also, testimony tending to show that, notwithstanding there existed in the popular mind some degree of prejudice against the use of the so-called alum baking powders, that prejudice was largely accounted for by the fact that the manufacturers of other kinds of baking powder had for years systematically advertised articles, in newspapers and otherwise, condemning alum baking powders as harmful and injurious to health.

The prosecution offered in evidence testimony as to the results of experiments conducted under scientific auspices with a view of determining the properties of alum and its effects upon the human system, and the nature and character of its various compounds, such as may result from the employment of alum as an ingredient in baking powder when used in the preparation of food, and supplemented those experiments with the testimony and opinion of expert chemists and physiological experts, tending to show that alum, when used as an ingredient in baking powder used in the preparation of food, was harmful in its



nature, and that its continued use for such purposes was likely to produce functional derangement of the digestive organs and destroy or at least impair nutrition and to prove ultimately prejudicial to the consumer by way of impairment of the digestive powers and injury to the general health.

The prosecution also produced evidence tending to show the existence of a well-established and long-entertained opinion upon the part of scientific men, and the public generally, that the use of alum as an ingredient in the preparation of food was harmful and should be prevented.

The record in this case is exceedingly voluminous, and, as far as the court is aware, the subject of the merits and demerits of alum baking powders is in this record for the first time in a manner so exhaustively prepared and presented for the determination of this case, and for this reason I have considered it to be proper to give my opinion upon that question irrespective of whatever opinion I may have in the ultimate determination of this case.

The testimony discloses that all baking powders when used in the preparation of food act mechanically. By the chemical action of some substances upon bicarbonate of soda there is released a gas known as carbon dioxide, or more popularly called carbonic acid gas. This gas, being liberated in the dough, forms bubbles, which take permanent form in the baking, thus making the substance light and porous. There are three classes of baking powders known to the trade. One is known as cream of tartar baking powder, in which the active chemical agent is bitartrate of potassium, which combines with the bicarbonate of soda, and the chemical reaction between these elements releases the carbon dioxide, or carbonic acid gas, as before specified.

Another class is what is known as phosphatic baking powder, in which the active element or ingredient is phosphate of calcium, which unites with the bicarbonate of soda, although the latter matter is not clearly set forth in the testimony. The chemical reaction is the same as in the first class, the acid phosphate of calcium uniting with the bicarbonate of soda, forming carbon dioxide.

The third class is what is known as alum baking powder. The active chemical ingredients in alum baking powders are sodium sulphate of aluminum and bicarbonate of soda. Each of the various classes of baking powders acts by the combination of the chemical agents, through the aid of moisture, and, in addition to the liberation of carbon dioxide or carbonic acid gas, there result by-products which, in the case of cream of tartar baking powders, take the form of a substance commonly known as Rochelle salts, a purgative agent in its nature, when given in sufficient quantities for that purpose.

The by-products resulting from the use of alum baking powders are, first, a substance commonly known as Glauber's salts, having the same effect and similar in its nature to Rochelle salts; also a substance known as hydroxide of aluminum, called by some of the witnesses hydrate of alumina. It is the latter substance which the prosecution contends is deleterious in its nature, so much so that it should be forbidden to be introduced into the food. The prosecution also contends that should there be, in the preparation of alum baking powders, a failure to adjust the proper balance between the chemical agents there would result an excess of one agent or the other which would produce results harmful in their character; that should there be an excess of sodium sulphate of aluminum, or alum, popularly so called, there would remain in the food unneutralized alum, which would be harmful in its nature and



calculated to interfere with the digestion and health of persons using such food.

The testimony upon this point showed that few, if any, of the manufacturers of so-called alum baking powders prepared their powders in the exact chemical proportions necessary to produce complete chemical reaction between the active agents without leaving a residue of either. The variations, however, shown in the testimony from perfect theoretical balance were so very minute that, taking into consideration the fact that all of the substances used were commercial articles, and therefore rarely, if ever, chemically pure, it may be said that the adjustment of the balance between the active agents in the preparation of alum baking powders is more properly a matter for practical experiment and determination than of mere theoretical dictation.

It was not proven in evidence that there were any instances in the use of alum baking powders which resulted in the leaving in the food product any free alum—that is, in its original form. Some experiments showed that alum in some form, whether in its original shape or as a compound, in combination with other substances, did exist in the resulting product. It is to be noted that in every instance the quantity of alum or alum compounds found by analysis in the resulting food products was extremely small and far below the limit fixed by experiment as being a quantity sufficient to produce appreciable effects upon the individual using the food product in any quantity, such as would be obtained in its use as food—such as would be obtained in practice.

It was shown as the result of chemical analyses that in a 1-pound loaf of bread prepared with alum baking powder there would be found, approximately, from 11 to 17 grains of hydroxide of aluminum, or, as it was termed by some of the witnesses, hydrate of alumina.

The prosecution contends this substance to be deleterious, and the eminent experts testified on that subject as to the theoretical effects of these substances, and from their reading and information and general knowledge of these matters serious results would follow the consumption of food containing alum.

Professor Mallet, of the University of Virginia, presented reports of experiments conducted by him upon himself as a subject, and his report was that, taken in single doses, it required not less than 20 grains of hydroxide of aluminum to produce any appreciable effect upon the subject. All other experts who testified for the prosecution testified purely upon a theoretical basis, and, although it appears to the court that hydroxide of alum is a substance easily accessible, and which could have been made the subject of practical experiments whereby the various eminent scientists could have made tests, yet they were without a single practical test, with the exception of that of Professor Mallet, and were without a basis of actual determination upon which to found their theory.

Upon cross-examination the experts testifying for the prosecution admitted that in all their experience and in all their reading and information that they possessed on the subject they had never themselves come in contact with, nor could they obtain, any information or any knowledge of any recorded instances in which functional disorders or disease or impairment of the digestion and general health had resulted to any human being from the use of alum baking powder as an ingredient in the preparation of food.

In the mind of the court this fact, considering the enormous proportions to which the alum baking powder industry has grown in this country and the length of time in which such baking powders have



been in use, stands as a stone wall against the deductions of the most eminent scientists who presented their theories on the part of the prosecution. I am unable to find in the evidence in this case any just ground for a ruling that alum baking powders, of themselves, when used in the preparation of food are in anywise less wholesome than any other variety of baking powders. This finding, however, does not or in its nature can not dispose of this case. The act in question is based upon the assumed power of the State, a power which is designated as the police power, for the protection, welfare, and health and safety of the people, is considered as the exercise—the valid exercise—of legislative power. That there exists in the minds of the public generally and in the minds of the scientific world a strong opinion that alum as an ingredient to be used in the preparation of human food is injurious there can be no question. That this opinion may have been and, in the mind of the court, was probably erroneous as far as it concerns the use of alum as an ingredient in baking powder can not justify the court in assuming to itself the functions of the legislative powers of the State.

That the act in question may have been passed by the legislature under a misapprehension is no reason why the court should not accept it as valid and enforce it. Such considerations, under the overwhelming weight of the authorities in this country, must be addressed to the legislative branch of the Government, not to the judicial, as a reason for overturning the action of the legislative department. The principle in question is clearly laid down by the Supreme Court of the United States in the case of *Powell v. Pennsylvania*, and *Plumley v. Massachusetts* and other cases. From the reasoning of the Supreme Court of the United States in those cases there is no escape, and a great deal of the evidence in this case that the court permitted the defendant to present, subject to the objection of the prosecution, is incompetent, and all of that testimony must therefore be ruled out. It appears from the agreed statement of facts that the act denounced by the legislature, having been committed by the defendant, he must necessarily be found guilty in this court, and a fine will therefore be imposed upon the defendant of \$100.

#### CONCERNING CREAM OF TARTAR BAKING POWDER.

The following is the article in the *New York World* of July 26, 1888, alluded to in Professor Austen's deposition:

[The World, July 26, 1888.]

The cream of tartar baking powders, such as the \* \* \*, are composed of ingredients which in themselves are comparatively harmless. When mixed with water, as they are in the kitchen whenever used, they attack one another and produce that perilous and poisonous drug, Rochelle salts. The purity of the ingredients, so urgently proclaimed by the manufacturers, increases the danger and amount of the product. In the noise and turmoil of brilliant and unscrupulous advertising the public are blinded to the true merits of the case and are too apt to forget the awful harm done to their stomachs, kidneys, and bowels by the always-present product, which is never mentioned in the advertisements—Rochelle salts—but which bursts into being whenever cream of tartar and soda bicarbonate are brought into chemical action.

The discussion of baking powder in these columns and the seemingly diverse opinions of experts have given rise to so much interest among scientific men and house-keepers that the reporter found physicians ready to talk upon the subject and heartily join in denouncing the much-used Rochelle salts powders, which are to a great extent responsible for the kidney troubles and dyspepsia which afflict the American people. Lack of thought and attention rather than ignorance has kept the medical



fraternity silent on this insidious but culminative drug—Rochelle salts—coupled, possibly, with the fact that they were unaware of the quality of the deposit from cream of tartar powders, like the \* \* \*. Chemical tests have proved that if a baking powder contains nothing but pure cream of tartar and bicarbonate of soda, as a much-advertised article would lead the public to believe, every half pound of powder used would leave as a residue in the bread half a pound of commercial Rochelle salts, a drug which, as a kidney and bowel destroyer, has few equals and no superiors. Yet, through ignorance, we are taking it ourselves and feeding it to our children and to delicate invalids for breakfast, dinner, and supper.

Concerning the effect of such doses of Rochelle salts taken through the medium of everyday food, Dr. David A. Gorton said:

"I have no hesitation in saying that it would be most disastrous. The continuance of such doses would inevitably affect the absorbents as well as the coat of the stomach and of the whole alimentary tract. The effect would in time become drastic, and would be exceedingly injurious to the coatings of the stomach and bowels. The effect on the kidneys would depend on the time the practice was continued. It certainly would produce serious chronic dyspepsia and chronic gastritis, and the ultimate result would be to impair seriously, if not destroy altogether, the functional ability of the alimentary tract."

Dr. E. H. Bartley, chief chemist of the Brooklyn board of health, and equally prominent as a physician in that city, said: "The cream of tartar, which forms the chief ingredient in so many baking powders, is, in the opinion of all who have given the subject proper attention, always injurious to health. For this reason bread made with cream of tartar baking powder or with the old-fashioned mixture of cream of tartar and saleratus is far inferior to that made with other preparations. The explanation is very simple. Whenever cream of tartar is used in the kitchen it is changed chemically and becomes Rochelle salts. Rochelle salts are a cathartic, a medicine which so irritates the stomach and intestines that nature sets up an inflammation and a sickness to expel it from the system. This expulsion takes the form of cramps, diarrhea, and dysentery. Besides this, the salt produces indigestion, dyspepsia, and constipation. Whenever there is a tendency to kidney disorders it aggravates them, and in many of these instances aids in starting the latent disease. Here is the field, therefore, where Rochelle salts inflict considerable injury.

"The chief source of Rochelle salts is in cream of tartar baking powders, of which the \* \* \* is a prominent representative. The amount of the dangerous compound they produce is vastly larger than is commonly supposed. Each baking powder of this class prescribes an ounce of powder to a quart of flour. When this is baked it makes a 2-pound loaf, which contains one-half of an ounce of Rochelle salts. Well-to-do people eat on an average half a pound of bread and workmen two pounds per diem. The former, therefore, take into their system a quarter of an ounce and the latter an ounce of Rochelle salts every day. The former certainly injure themselves, while the latter are ruining their systems. This probably is a powerful factor in causing the great mortality in sickness among working people. The endless talk about pure and impure cream of tartar baking powders is of little or no significance. It serves, however, to conceal the more important physiologic fact that they are changed to Rochelle salts, an injurious and dangerous chemical salt."

Dr. Frank A. West, professor of materia medica in the Long Island College Hospital, said: "There is no doubt that it would be apt to produce gastro-enteric catarrhal inflammation. Rochelle salts act as an irritant more or less actively, though it makes a difference how they are administered. When they are introduced into the system in food they have to be eliminated either through the bowels or kidneys, and this would produce a highly irritating effect if kept up for any time."

Dr. W. H. Farrington, the house physician at the Astor House, said: "It is certainly true that a baking powder which produces Rochelle salt as a result of chemical action would produce an injurious result by causing irritation of the intestinal canal, which after a time would cause obstinate constipation. Rochelle salt is a drug which was formerly in common use. It is irritating in its action, and if this irritation is kept up by its daily use the intestinal canal would be kept in a congested condition. If this daily use were continued for a considerable time, it would be likely to result in chronic dyspepsia, and would certainly injure the tissues, as well as the mucous membrane. A small dose taken occasionally might do no harm, though a physician should be consulted before taking it."

Mr. A. J. Ditman, the well-known pharmacist, referred the reporter to Dr. William H. Dustman as "the scientific sharp of the establishment," and Dr. Dustman said: "I have seen prominent physicians quoted in regard to this matter, and I have no hesitation in saying that they are right when they say that a small dose of Rochelle salt taken once in a while would probably do no harm, but that if it should be used daily for a considerable time, it would have a most injurious effect, and would be especially dangerous to both stomach and bowels. It is purely a



medicine, and has no place in an article of diet for a healthy man. A baking powder which would produce Rochelle salt would inevitably injure the bowels by constant irritation."

Dr. W. J. Purcell, of the New York Board of Health, said: "Rochelle salts have long been used by the medical faculty as a cathartic and a laxative, but they are not nearly as much in vogue at the present time as in the past generation. If used persistently they exercise an aperient action, and after that they produce an irritation of the bowels which becomes chronic, and which almost invariably results in severe and chronic constipation. For this reason physicians seldom, if ever, use Rochelle salts to-day for laxative purposes. They are a medicine, and, except in those cases of disease where they do actual good, they are to be avoided."

Dr. Moreau Morris, of the New York Board of Health, said: "It may be that I am a little prejudiced, but I think that I express the consensus of the medical profession when I say that Rochelle salts should never be used by a person except by a physician's advice. Its continued use induces a very unhealthy condition of the stomach, and especially of the bowels, and finally produces constipation of an aggravated type."

Dr. J. T. Nagle, chief of the New York bureau of vital statistics, said: "Rochelle salts are essentially a medicine. Their steady use would exert an inflammatory and dangerous action upon the stomach and bowels."

Dr. Philip E. Donlin, ex-deputy coroner of New York, said: "Rochelle salts are nothing more or less than a cathartic drug, and have a profound influence upon the bowels and some upon the kidneys. They irritate these and produce a morbid condition, which in the end is bound to result in constipation. They are used directly, and they are also the active result of Seidlitz powders when these are dissolved and mixed. They are likewise produced by many baking powders like the much-advertised \* \* \*, whose chief ingredients are cream of tartar and baking soda. Their regular use would injure the bowels and kidneys."

Dr. Robert L. Dickinson said: "The effect upon children would undoubtedly be far more serious than upon adults, but even upon an adult the effect would be to produce diarrhea, colic, and a very much disordered condition of the stomach and bowels. In time it would thin the blood by extracting certain of its constituents so as to produce anæmia. It would unquestionably produce a chronic gastric catarrh, if not gastritis. It would also affect the kidneys by increasing the amount of solid matter to be excreted by them. According to Bartholow, the best authority we have, the continued use of alkalis would produce the effect of a heart poison by lowering the blood pressure, the temperature, and the action of the heart. Such effects are often seen in patients who have been actively treated for acute rheumatism by this very remedy."

#### THE INVESTIGATION BEFORE SENATOR MASON WAS NOT COMPLETE.

A request was made for a hearing, by one of the members of the American Baking Powder Association, which was not granted, as appears by the following affidavit:

Personally appeared before me Hooper Coyne, a manufacturer of baking powder of Baltimore, Md., who deposes and says that on the 19th day of January, 1900, in behalf of the American Baking Powder Association, he addressed a letter to Hon. W. E. Mason, chairman of the Senate Committee on Pure Food Investigation, requesting a hearing before the committee, and that he received no reply thereto, although the letter was sent by special delivery.

HOOPER COYNE.

Subscribed and sworn to before me this 21st day of April, A. D. 1900.

[SEAL.]

JAS. W. CLAYTON, Notary Public, Maryland.

Nevertheless, after this date and without notice to this association or Mr. Hooper Coyne, testimony was taken or letters solicited and printed from twenty-eight persons hostile to the use of alum in baking powder.

In many of the letters sent by Senator Mason was inclosed a pamphlet published by the American Grocer Publishing Company, of New York, of which Francis B. Thurber is president, which contains a compilation of testimony against the use of alum.



The persons quoted in this pamphlet as hostile were asked with regard to the use of alum in food. (See p. 620 of Mason Report.)

Their testimony it was known to the Senator would probably add to his "overwhelming mass of evidence against the use of alum."

Francis B. Thurber, who authorized the compilation of the pamphlet referred to and the use of the name of its publisher, appeared before the committee of public health of the senate of the State of New York during the last session and advocated the passage of a bill to prohibit the sale of alum baking powders then pending, and the next day read an attack on alum baking powder before the National Pure Food Congress. He did not deny when questioned that this pamphlet was being used by interested parties for distribution throughout the country. Mr. Thurber is very well known.

The use of the pamphlet by Senator Mason, his telegrams and letters to the people quoted therein, the taking of testimony, and the publication of their letters, together with the fact that the distinguished scientists who are quoted by Peter T. Austen were not invited to verify their opinions favorable to the use of alum baking powders, and the further fact that the hearing asked for was not granted this association, is a matter we think should be brought to the attention of your committee.

For these reasons we feel that as the press is closed to us by the iron-clad contracts, the terms of which have been set forth in this document, by the heavy value of the sums paid for advertising by the Royal Baking Powder Company, and as our only means of presenting our answer and evidence to Congress is by this memorial, we herewith give answer to their testimony given before Senator Mason.

Below is given a copy of that portion of the index of the report by Senator Mason, from the Committee on Manufactures, which touches alum or cream of tartar baking powders. It will be noted that the evils of alum and the virtues of cream of tartar are amazingly demonstrated even here.

Alum in baking powders .....	
Alum baking-powder advocates .....	
Alum in baking powders, prohibition of, advocated by law .....	
Alum, prohibited use in foods in England, France, and Germany .....	
Alum in baking powders, restricted use in Minnesota and Wisconsin .....	
Alum, poisonous as an ingredient in foods .....	
Alum, a toxic poison, experiments with .....	
Alum not found in potable waters, fruits, or natural foods .....	
Alum, experiments with, upon dogs, with tables and maps .....	
Alum, experiments with, upon bladder of freshly killed animals .....	
Cream of tartar .....	
Cream of tartar, high purity of refined product .....	
Cream of tartar, product of grapes, found in all fruits .....	
Cream of tartar substitutes proved by analysis, "C. T. S." (cream of tartar substitute), simply alum adulterant .....	
Cream of tartar in baking powders .....	

Twenty per cent of this report is devoted to baking powders, one subject out of 677 discussed.

One hundred and twenty-four pages attack alum and a meager 12 are permitted to go in in favor of alum. It took 72 pages of adverse testimony to answer the simple 12 pages given by Peter T. Austen. This testimony was given by 30 persons, while the request of the American Baking Powder Association to be heard was ignored, much less granted.



AN ANSWER TO EACH WITNESS WHO TESTIFIED BEFORE THE COMMITTEE ON MANUFACTURES AND A COMPLETE REFUTATION OF THE CLAIM OF SENATOR MASON THAT THE EVIDENCE IS OVERWHELMINGLY AGAINST ALUM BAKING POWDER.

The committee states that for twelve months a most searching investigation has been made; and that its time were worse than wasted "if it were not prepared to make specific recommendations, based upon the evidence which it has taken where such evidence is conclusive. Therefore, so far as the use of alum in the manufacture of a food product, such as baking powder, is concerned, the committee, in view of the overwhelming mass of evidence antagonistic to its use, recommends that its use in food products and baking powders be prohibited by law."

In answer to this it may be said that the committee did not make a searching examination of the baking-powder matter. Not a single one of the many opinions in favor of alum baking powder given by distinguished men at home and abroad are found in this report. The effect of Professor Austen's short statement was ludicrous in the extreme. From that point to the end of the report more and more space is given to the opponents of alum baking powder. Chemists who were known to be favorable to the cream of tartar powder were telegraphed for to come on at once and testify before the committee. Old reports of no value were resurrected from library dust bins and used to fill up the report, in some cases with the dates omitted, so as not to attract public attention to their antiquity. In fact, the exact experimental investigation made by Professors Flint and Smith being unanswerable, pages of mere opinions not based upon facts, experience, or experimental investigation were introduced, so as to form what might be called an "overwhelming mass of evidence," and thus delude those not familiar with chemical and physiological science into mistaking opinions for proofs.

It is therefore eminently fair that some of the statements made before the Mason committee be considered, so as to ascertain just what value may be assigned to them as proof that the use of alum baking powder in the preparation of breadstuffs is injurious to health.

In the first place, let it be clearly understood that eating alum as alum and eating bread made with an alum baking powder are entirely different and distinct matters, for in the former case one eats alum and in the latter one doesn't. Very adroitly and with the most frankly dishonest motive, in the advertisements of the Royal Baking Powder Company and in some of the questions and answers in the report of the Mason committee, the attempt is made to apply to food made with alum baking powder the information given about alum, and also to call baking powder a food product (p. v), which it is not. The confusion of ideas and facts thus resulting is one of the most interesting specimens of unscrupulous, misleading argumentation on record.

Page xi. It is stated that people eat alum. This is false. It is also stated that cream of tartar is a natural food product. This is false. It is inferred that people who use cream of tartar in making their own baking powder eat cream of tartar in the food thus prepared. This is also false, for the cream of tartar is destroyed during the preparation of the food, as is also the alum.

Page 46. Professor Wiley is asked about the effects of alum, and makes out a bad case against it. He is then asked if alum is found in baking powder. He is not asked if he is positive, from experiment, that alum exists in breadstuffs made with alum baking powder. His



inability to swear that cream of tartar was proper to use and healthy brought his examination to a sudden termination.

It may be said here that the exsiccated alum used in making baking powders is quite a different article from the ordinary crystal alum, which is what the public understands by "alum." Exsiccated alum is a dry, white powder, with but a slight taste. It dissolves slowly and with difficulty in water. In view of all the slanderous statements that are being spewed upon alum just at present, this explanation seems called for.

It may also be said here that the manufacturers of alum baking powder do not oppose honest and fair pure-food legislation, nor are they in favor of any kind of fraud or deception. All they ask is justice. They are not afraid of any legislation that is based on facts, but they object to and will contend against any legislation which is of a partisan nature, which is intended to benefit a rival industry at the expense of theirs, and which is supported by false and manufactured testimony, on the opinions of scientific men which are not supported by experiments and facts, or which will destroy a great industry employing a large amount of labor, which has taken a great deal of time and money to develop, and which is represented by over five hundred manufacturers scattered over the entire country.

Page 108. Professor Mitchell states that he failed to find any baking powder which did not leave soluble alum in the food. He presumably means any alum baking powder. Cream of tartar baking powders are claimed not to contain alum at all. He states that all alum baking powders leave alum in the bread. How he proved this he does not state.

He also claims that soluble alum exists in the solution of an alum baking powder when simply mixed with warm water. How this is chemically possible in the presence of an excess of bicarbonate of soda, which precipitates and decomposes alum, he fails to explain.

"In his opinion" the residue, aluminium hydroxide, would dissolve in the juices of the stomach. Here is the type of expert opinion alluded to in Judge Clark's summing up (*State of Missouri v. Lawton*). There is an immense amount of opinionating done, but no one knows of a case of injury done to health by the use of food prepared with alum baking powder.

Later on Professor Mitchell (p. 117) states that cream of tartar is a "chemical" and will produce physiological effects if taken in large enough amounts. He then hastens to say that he would prefer it to an alum substitute by all odds, presumably that anything, even a "chemical" producing physiological effect, is better than alum.

The chairman (p. 192) asks of Dr. Piffard the question: "What do you say about alum as a food product?" With equal absurdity one might ask, "What do you say about a dose of arsenic as an appetizer for dinner?" or "What is your opinion as to the advisability of administering paris green to farm laborers who have swallowed potato bugs?"

The witness, Dr. Piffard, answered the question about alum very cautiously: "I do not care to eat any, sir." Of course, the next question was about his opinion concerning the use of alum in baking powder, for it was fair to infer that as the doctor did not care to eat alum he could not consistently care to eat bread made with alum baking powder, even though it might not contain any alum. Dr. Piffard, however, merely answered that he was not an analytical chemist, but a physician. Although it might be fair to suppose that a physician would know more about the wholesomeness of food made with alum baking powder than an analytical chemist, the chairman begs his pardon and says he asked the question because he was absent.



This is cited as a part of the overwhelming mass of evidence antagonistic to the use of alum in baking powders. While it may not be of much value as evidence, it is interesting as an example of mudlike lucidity and mastodon playfulness.

Prof. Albert B. Prescott (p. 197) states that "When in the condition of aluminium hydrate or other compound of alum in contact with the acidulous and albuminous fluids of the stomach it is liable to go into combination with the digestive agents of the stomach and with the principles of the food, the constituents of food, which effect, though very slight, when continued from month to month and year to year tends to impair the sources of nutrition."

This is an example of learned talk which goes a long way with those who accept what they hear without question. But the whole statement is conditional. No facts or experiments are given to substantiate the statements, and indeed there are none. The conclusion as to the effects of the daily administration of small amounts of astringents can be as well drawn to improve the sources of nutrition as impair them. The exact information on these points can be used about as well on one side as on the other. Of course what Professor Prescott says here about astringents and precipitants can be applied as well to other articles of food, as, for instance, coffee and tea (both of which contain tannin, the astringent par excellence) many fruits, nuts, wines, etc. All would be condemned under this statement. And especially condemnable, according to Professor Prescott, ought to be the daily administration of considerable amounts of Rochelle salts, which are consumed in the bread made with a cream of tartar baking powder.

Professor Prescott stated, under oath, in *The State of Missouri v. Whitney Layton*, that he was asked to testify before Senator Mason's committee by Dr. McMurtrie, chemist of the Royal Baking Powder Company, and he could not afford to leave his duties unless he received his compensation of \$100 a day and expenses. Senator Mason, however, states (p. 195) that he sent for Professor Prescott because he heard he was in the city. He also admitted that for appearing as an expert witness for the prosecution, in *The State of Missouri v. Whitney Layton*, he was paid \$100 a day and expenses by the Royal Baking Powder Company. And further, that he had not himself made any experiments or conducted any experimental work on bread made with alum baking powder.

On page 200 another ingenious attempt to confuse the alum and the baking powder residue questions will be found. Professor Prescott states that Rochelle salts are a salt of an acid that occurs in fruit, and in small doses has the favorable effect which fruits have as articles of food. "Those properties," asks the chairman, "you would not consider to be possessed by alum made by chemical means?"

A. "Quite the contrary."

Q. "Then you would regard the residue left from the cream of tartar baking powder as favorable to health, and the residue left from alum baking powder as injurious to health?"

A. "Quite so, in both cases."

In criticism of this it may be said that many physicians are violently opposed to the administration of Rochelle salts without the knowledge of the user; that Rochelle salts do not occur in fruit, nor are they formed during the digestion of fruit; that the attempt to discredit the "chemical" process of making an article as compared to a process of nature is unworthy of an educated man; that the use of the word "then" in the last question, "Then you would regard the residue," implies an inference. But there is no inference. This is a case of opera-bouffe dialogue.



Prof. Victor C. Vaughan, who testified before Senator Mason's Pure Food Committee, also stated, under oath, in *The State of Missouri v. Whitney Layton*, he was told by Professor Prescott that Dr. McMurtrie (chemist of the Royal Baking Powder Company) wanted him to testify before that committee, and that his compensation (\$100 a day) and expenses were paid in the same manner as Professor Prescott's (i. e., by the Royal Baking Powder Company). Professor Vaughan also admitted that he received \$100 a day and expenses from the Royal Baking Powder Company for giving expert testimony for the prosecution in *The State of Missouri v. Whitney Layton*.

Professor Vaughan testified before the Mason Pure Food Commission against the use of alum in baking powder. His chief reason was that unchanged alum was in many cases left in the bread, and that it was liable to be harmful. He states that in small doses of 5 grains it acts as "an astringent, and it interferes with the secretion of the gastric juices and has an astringent effect upon the intestines; is liable to cause constipation; and for these reasons it is injurious, especially when taken two or three times a day over a long period of time."

In his testimony in the St. Louis case Professor Vaughan testified that he had never conducted any experiments with bread cooked with alum baking powder or eaten it, or fed it to others for the purpose of seeing what effect it would have upon the health and the digestion. He also swore that it would be impossible to tell what the effects of food prepared with alum baking powder would be upon persons of normal health, and that during twenty-five years of reading, practice, and experience he has never seen any ill effects traceable to the use of alum baking powder, and further that his opinion as to the deleterious effects of the use of alum baking powder was based upon theoretical propositions, and not upon cases that had come under his individual observation or which were recorded in books.

This is another luminous example of the overwhelming mass of testimony antagonistic to the use of alum in baking powder which fills the Mason report. Professor Vaughan does not state that he has ever found unchanged alum in bread made with alum baking powder; he does not even claim that the amount of bread eaten at a single meal could possibly contain five grains of alum, or if it did that one could eat that amount of alum in three or four slices of bread without detecting the taste of alum, and hence rejecting the bread. His testimony before the Mason committee is entirely irrelevant. He states that no one would claim that it would be injurious to eat a pound of grapes. Such sweeping statements are always dangerous. Here they are indicative of the method which characterizes the policy of the Royal Baking Powder Company, viz, anything to kill alum. Professor Wiley (p. 232) accentuates the idea that because cream of tartar occurs in the grape it occurs in a natural food, while alum does not—there is a difference between them. It is not clear, however, that such a difference shows anything more than that the advance in science has been sufficient to enable chemists to become independent of nature's method of production in this as well as the many other lines of productiveness, which, if anything, would seem to be to their credit.

Dr. H. Pruyn Stringfield (p. 548) concludes that the great majority of cases of difficulty with the digestive tract might be (not have been) traced to white bread and quick hot bread made with baking powder. As he does not specify any particular kind of baking powder, he is evidently opposed to any and all kinds. This was probably the reason why he was not questioned about cream-of-tartar baking powders. He considers alum as an irritant, a poison, an astringent, and the cause of



many evils, even of death. As to baking powders, he demands positive legislation, even national legislation; but of what kind he does not state. He does not state that he has found free alum in bread made with alum baking powder, nor has he made any experiments on himself or others with bread made with alum baking powder. As far as the unwholesomeness of food prepared with alum baking powder is concerned, Dr. Stringfield's testimony is not based on facts or experiment, and is entirely irrelevant.

Prof. J. W. Mallet (p. 549) testified at great length and introduces in full an article published in the *Chemical News*, of London. Professor Mallet admitted under oath in the Missouri case that a part of the work included in this article was done at the request of Mr. Hoagland, of the Royal Baking Powder Company, and paid for by him. He also stated that he was paid by the Royal Baking Powder Company for testifying on the side of the prosecution in the St. Louis case \$50 a day expenses and \$250 for special work. Professor Mallet also stated, under oath, before the Mason committee (p. 550) that in appearing before that committee he did not represent any manufacturer whatever. Professor Mallet swore in the St. Louis case that he had not done any experimental work on the physiological effects of alum baking powder residues since 1888, so that his testimony given before the Mason committee is practically a reiteration of the work paid for by Mr. Hoagland, of the Royal Baking Powder Company, and published in the *Chemical News*, of London. This article is printed in full in the Mason report (p. 557). No allusion, however, is made to the connection between this article and the Royal Baking Powder Company, which is natural enough, in view of Professor Mallet's statement that he did not represent any manufacturer, nor was he interested in the manufacture or sale of any baking powder. In view of the particular nature of Professor Mallet's work and his connection with the Royal Baking Powder Company it may not be necessary to criticise his testimony before the Mason committee, but it may be well to draw attention to a few points.

Professor Mallet's work is practically valueless, because it avoids the real question, which is not what is the effect of baking powder residues when taken in large quantities, representing an amount corresponding to several loaves of bread, and which could not be eaten at once, but is bread made with alum baking powder wholesome or not. He ate hydrate of alumina prepared in the laboratory, and not in the condition in which it exists in bread made with alum baking powder. When he has consumed some twenty grains he begins to feel a sensation of "apprehension." Some of these doses were taken on an empty stomach. He practically admits that the amount of hydrate of alumina in a loaf of bread had no effect upon him when taken at a single dose. His experiments were performed only on himself. He did not make, as he would doubtless have done had he been making an independent scientific investigation, a study of the effects on himself of the residue from cream of tartar baking powder. Perhaps Mr. Hoagland, of the Royal Baking Powder Company, had no interest in the sensations that Professor Mallet might have experienced (presumably not those of "apprehension") had he taken 50 grains of Rochelle salts several times a day, especially on an empty stomach.

He finds an objection in the use of alum in baking powders on the ground that incompetent persons may try to manufacture them and either get the proportions wrong or not have proper machinery to effect perfect mixing. Such reasoning would prevent competent people from manufacturing because incompetent ones did not know how to, and the



principle might be applied in many cases. This assumes that the public is a big enough fool to buy a poor article when it can get a good one.

Concerning Professor Mallett's physiological work, Dr. Crampton, in Bulletin 13 of the United States Department of Agriculture, writes as follows (quoted on p. 624 of Mason's Report): "I think the evidence furnished by his physiological work is hardly sufficient to justify his conclusions as to the harmfulness of such powders." It is also worthy of note that Professor Mallet has not experimented since 1888, since which time the manufacture of alum baking powders has been greatly improved. The exsiccated sodium alum now used in making alum baking powder was not perfected in 1888. In spite of Professor Mallet's efforts to make a case against the use of alum in baking powder, he did not make any experiments to show that unchanged alum is left in the bread made with alum baking powder. His experiments from which he infers that aluminum hydroxide impairs digestion are of course contradicted by the experimental work done by Professors Smith and Flint.

Even giving Professor Mallett's article the attention it does not deserve, it must be considered as irrelevant, for he does not undertake to show by experiment that food prepared with alum baking powder is unwholesome.

Mr. F. B. Thurber stated (p. 581) that his firm made up their minds that alum baking powders were deleterious to health. As he does not say what reasons led them to form this conclusion his statement can not be considered as evidence, especially as Mr. Thurber is not a scientific man.

On page 588 some more instances of the "overwhelming mass of evidence" may be found. "What," asks the chairman, of Professor Wiley, "is your opinion of alum as food?" This question opened up an unexpected field of inquiry. There is said to be a race of natives in Africa who eat dirt, and dirt contains alumina, but so far no testimony had been given before the Mason committee which might lead one to suppose that alum was eaten by any class of people as a food. Sensational questions might follow this prelude, as for instance: "Do you consider it advisable for a postman to make his entire breakfast of Rochelle salts?" or, "If a man should eat in half an hour from four loaves of bread made with alum baking powder and thereupon after be unable to concentrate his mind on an abstruse point of law, would you infer hydrate of alumina inhibited the ability to concentrate?"

Professor Wiley, however, answers cautiously and with correctness that he considers alum to be a poor stuff for food. He says alum is injurious. It is to be observed that all this has nothing to do with alum baking powder. It is what is vulgarly called a "bluff." As a fact, Professor Wiley does not state that alum baking powder leaves unchanged alum in the bread. He is right when he says that alum is poor stuff for food. And so are cream of tartar and Rochelle salts poor stuffs for foods. The argument is puerile and a *reductio ad absurdum* therefrom is easy.

Professor Wiley says (p. 588) that in Bulletin 13 of United States Department of Agriculture Dr. Crampton states that of all baking powder examined he finds the Royal to be the best. A careful reading of the bulletin fails to discover this statement.

As Dr. McMurtrie is the chemist of the Royal Baking Powder Company, his testimony (p. 593) is naturally not in favor of alum baking powder.

Dr. W. M. Fleming (p. 604), a qualified examiner in lunacy, considers



that the effect of alum in baking powders is to solidify or harden the gluten of flour, impair the digestion, induce constipation, and in excessive use produce visceral inflammation and enteritis, resulting in hemorrhoidal signets. It also embarrasses the genitourinal functions, producing functional derangement of the action of the kidneys and bladder, likely to result in strangury as a sequel. He considers that the use of alum in breadstuffs (he does not say baking powders) is almost criminal, and favors special legislation to this end. The effects of eating bread made with alum baking powder, as pictured by Dr. Fleming, are simply horrible. This information ought to be disseminated among the millions of people who eat food made with alum baking powder so that they might know what is the matter with them. It is a remarkable evidence of the ignorance of the American nation that millions of people who feel all right, and are so considered by medical men, are really suffering from such a series of diseases. Dr. Fleming does not state that unchanged alum is left in bread made with alum baking powder, nor does he give any instances of cases of injury caused by the use of food prepared with alum baking powder. His testimony appears to consist of opinions not based on facts.

Dr. W. R. Kerr (p. 605) is strongly opposed to the use of alum in baking powders, but does not state that unchanged alum exists in the bread. He confuses alum with food products made with alum baking powder.

Prof. H. S. Weber (p. 605) objects to the use of alum in baking powders for several reasons. That alumina compounds do not occur in foods. He forgets that mushrooms often contain alumina salts. That alum springs are eagerly sought by many people. He objects to a lum in food, but does not state that unchanged alum exists in bread made with alum baking powder. He states that aluminic hydroxid is soluble in dilute acid, and "consequently" in the juice of the stomach forgetting that this is a matter of experimental demonstration and not inference. He thinks the bitter taste of Glauber's salts makes the use of alum baking powder objectionable because it is formed as a part of the residue from an alum baking powder; but, on the other hand, it is claimed that this bitter taste is a great advantage, because it prevents mistakes in the kitchen. Should by any mistake too large a quantity of alum baking powder be used in making biscuits the bitter taste announces the fact, while in the case of cream of tartar baking powder, the first intimation that the cook was too generous in her use of powder is the purging of the unhappy consumer by the increased dose of Rochelle salts.

Deputy Surg. Gen. Charles Smart (p. 606) finds alum in some samples of bread, but does not state that it came from alum baking powder. He states that many laboratory experiments have been performed which support the view that digestion is impaired by the presence in the stomach of the substances formed during the decomposition of the alum. What these experiments are he does not state. The work done by Professors Smith and Flint will doubtless dispel his doubts. His discussion of the matter does not justify his conclusions.

Surg. Gen. S. M. Sternberg concurs with the "views" of Lieutenant-Colonel Smart. He evidently does not consider them as either facts or conclusions and expresses himself in a noncommittal and guarded way.

Prof. C. E. Munroe (p. 608) appears to hold that because a substance occurs in vegetation its use as a food is indicated. Much trouble might result from the application of this principle, say with the castor-oil bean. That he is not aware that compounds of aluminum occur in plants is his misfortune. The references are in the chemical literature



and can be read by anyone. He will be surprised to find that alumina exists in human milk. He "believes" that hydrate of alumina will exert a harmful effect. He has, however, made no experiments himself, and hence expresses only an opinion. Later on Professor Munroe made bread with alum baking powder, extracted the bread with dilute hydrochloric acid, dialyzed the liquid and found compounds of aluminum in the dialyzates. As he did not make a blank test with the flour alone and did not determine the amounts of soluble salts of alumina present his experiments are not positive, for the soluble salts of alumina which he found may have come from the flour and not from the baking powder. It is a well-known fact that many samples of flour contain alumina. His inference that because a substance goes into solution in a 0.2 per cent solution of hydrochloric acid it will dissolve in the juices of the stomach, and that the alumina so dissolved will pass into the blood by osmosis, require experimental demonstrations on living animal or human beings and can not be proved by inference. Professor Munroe's statements and experiments are inconclusive.

Dr. M. F. Cuthbert's testimony (p. 609) is indefinite, and he frankly admits that he has not studied the matter to any particular extent, or has he been particularly interested in it from a chemical standpoint. His practical knowledge of alum is limited to its use in medicine. His testimony is entirely irrelevant. He was not asked about Rochelle salts and cream of tartar baking powders.

Dr. W. S. Woodward, health officer of the District of Columbia, states (p. 610) that he had never seen nor heard of any specific case in which injurious effects have been traced to the use of alum in bread or baking powder. He does not know of any definite investigations that show the harmful effect of the residue from alum baking powder. He was not asked about Rochelle salts and cream of tartar baking powders.

Dr. W. M. Mew, chemist to the Army Medical Department, is called before the committee, because, as the chairman, he had been asked by the manufacturers of other baking powders—that is, cream of tartar baking powders, presumably the Royal Baking Powder Company—to obtain the opinions of a number of scientific gentlemen about alum baking powder. Dr. Mew states that the proof of alum baking powder being objectionable is not so apparent as it might be, and in his testimony he does not make it any more apparent. He is cautious and noncommittal. He does not know if hydrate of alumina dissolves in the stomach juices or not, and if it does he knows of no evidence that indicates that it will do harm. He does not recommend the use of alum in baking powder, but has no apparent reason for not doing so. He thinks that the points brought out are more or less hypothetical and problematical. "There has been very little physiological work done upon them, and that is the ultimate analysis—the physiological test."

He considers that it is better to use tartrate powders, but assigns no reason for this opinion except that there are possibilities, perhaps probabilities, of some harm being done by the alum powder. What these are he does not state. He seems to resent the idea of even offering an alum baking powder to the Regular Army or the Commissary Department, but in view of his previous statements it would seem but fair to make a trial of it, as the saving to the Government would be considerable. The great physiological experiment involved in the consumption of 100,000,000 pounds of alum baking powder a year without a single case of ill effects he overlooks entirely.

It is to be noted that the chairman does not mention to Dr. Mew, or



to any of the witnesses, the chemico physiological experiments of Professors Smith and Flint, presented by Dr. Austen (p. 538), and which would doubtless have satisfied Dr. Mew and the other medical experts who lacked definite information about the effects of alum baking powder; nor were most of the witnesses asked their opinions about cream of tartar baking powders and the effects of Rochelle salts.

Prof. E. J. de Schweinitz (p. 614) agrees with what was said by Drs. Mew and Woodward, although neither of them said anything definite. He states that even if it were conclusively proved that the use of a substance in food were perfectly harmless, its use could not be recommended. This is a most surprising statement and would seem to call for some kind of an explanation. Alum in baking powder, he states, may be said to be theoretically injurious. If his testimony means anything it would appear to support the idea that alum in baking powder is practically harmless. A

Dr. J. T. Johnson, a professor of gynecology and abdominal surgery (p. 615), states that he is not a chemist or an expert on the question of alum as a food or its mixture with bread or baking powder. Neither has he given any scientific examination to these matters. He speaks from a practical standpoint as a physician. To an ordinary person it might seem that in view of this introduction Dr. Johnson's testimony would not be of much value, but the chairman says: "That is what we wanted; that is what we called you for." Dr. Johnson states that from his knowledge of alum, its effects and uses, if it got into bread or baking powder and in that way was introduced into the system, its effects would be injurious. In homeopathic doses he does not know that it would have very injurious effects, unless the doses were continued; then, if the person got more of it in one place than another, it might do harm. What these "places" are he does not state. The use of alum in bread and baking powder appears to mean the same thing to this gentleman, but his frank admission of incompetency at the beginning of the examination renders it unnecessary to criticise his testimony further. He does not state, however, that there is unchanged alum in food made with alum baking powder.

Surg. Gen. W. K. Van Reypen (p. 615) states that "there can be no question that the alum frequently entering into the composition of baking powders is seriously injurious to the digestive system." This statement comes dangerously near to a quibble. Does the Doctor mean that the alum, of the kind used in baking powder, is injurious when taken as alum, or does he mean that when an alum baking powder is used in the preparation of food more or less of the alum remains in the food as unchanged alum, and this unchanged alum produces serious injury to the digestive system? As his statement stands it is unintelligible. The witness probably does not know that "the testimony that has been before the public on this point (against the use of alum in baking powders) for many years," and to which he refers, consists for the most part of reading matter inserted and paid for by the Royal Baking Powder Company under contracts that no matter contradictory to the statements shall be published by the papers accepting the advertisements.

Supervising Surgeon-General Wyman states (p. 616) that alum applied locally to a mucous membrane is both astringent and irritant. He does not state that alum baking powder would in such a case act as an astringent and irritant. It is a fact, however, that bicarbonate of soda, one of the chief constituents of alum baking powder, is often



applied to burns to sooth irritation. A little fairness might be demanded even when acting on the principle of "anything to kill alum."

Tannin is an astringent and an irritant. It exists in coffee, tea, and in many fruits, etc. According to Dr. Wyman's view, these articles should be condemned as food. He does not state that unchanged alum exists in food prepared with alum baking powder. He does not mention any case of ill effects caused by food made with alum baking powder.

Mr. W. A. Withers (p. 617) gives an opinion based upon what the experiments of others indicated to him. He was not asked about the experiments of Professors Smith and Flint. His opinion is conditional and level—does not call for criticism.

A statement made by Professor Cornwall and published in the *American Grocer* is quoted (p. 618). This statement was made by Professor Cornwall in the report of the New Jersey dairy commissioner for 1888, and has been recently resurrected. Since the date that his opinion was published the manufacture of the alum baking powders has been perfected; their consumption has greatly increased; no case of ill effects caused by them can be found, although such a case would be of immense value to the cream of tartar industry; and, finally, the experimental investigations of Professors Smith and Flint have been made, and the whole question of the healthfulness of food prepared with alum baking powder has been settled, in the summing up of Judge Clark in *re State of Missouri v. Whitney Layton*. All the evidence up to date on both sides was introduced in this case.

After carefully studying the testimony for a long time, and twice deferring his opinion, Judge Clark finally stated that he was unable to find any facts that would lead him to believe the use of alum baking powder in preparation of food was attended with ill effects. In view of the latest facts and investigations, increase of consumption, the Missouri case, etc., opinions expressed in 1888, when there was but little known about the real questions involved, can have but little weight.

As an offset to Prof. W. G. Tucker's additional statement (p. 618), in which he considers the use of alum in baking powders as highly injurious, may be compared his statement in the report of the New York State board of health on the use of alum in bread raising. As a result of such investigation under the direction of Prof. Charles F. Chandler, viz, "It may be said that, at the present time, there does not seem sufficient evidence as to the injurious effects of alum upon the human system to warrant legislation against it."

Prof. J. H. Appleton (p. 619) "believes alum baking powder results in the introduction into the system of aluminous compound that produce painful and serious disturbances of the digestive functions." He does not state his reasons for forming a belief that is opposed to the facts. Such an assertion is the same as saying that the majority of the people of the United States are suffering from painful and serious disturbances of the digestive functions, for certainly the majority of the people eat food prepared with alum baking powder. Professor Appleton doubtless means well, but his statement indicates thoughtlessness and ignorance of the facts.

Medical Director Dr. S. F. Price (p. 619) has had no practical experience in the use of alum in baking powders, but is decidedly of the opinion that cream of tartar is relatively harmless compared with alum.

Reasons for this opinion are not given. His testimony is incompetent.

Asst. Surg. G. F. Freeman states (p. 619) that he considers "the continued use of alum in baking powders injurious, for the reason that



some of the alum will remain and be taken into the stomach in a soluble form, most probably the hydrate, and being soluble in the acid secretions of the stomach," etc. This is unintelligible. Alum is not the hydrate. No cases of injury from the use of alum baking powder are cited.

Prof. S. Fairhurst (p. 620) draws a gloomy picture of the effects of alum on the human system. But he "thinks" that the hydrate of alumina which is left in the bread made with alum baking powder would be injurious to health. He offers no evidence to support his thought. Such a statement is not based on facts; it is unfair and unscientific. Neither does it accord with the fact that people who use alum baking powder are not invalid.

Prof. H. Morton (p. 621) does not qualify as an expert in the baking-powder contention. He expresses an opinion based on his reading and the experiments of others. As he does not say what the experiments are, a criticism of them can not be made. He does not refer to the experiments of Professors Smith and Flint.

Professor Prescott, later on, having read that the injection of alum into the blood causes degeneration of the nervous tissue, and fearing that solution and absorption of aluminum compound will result from the use of alum baking powders, writes Senator Mason (p. 625) suggesting that the sale of alum baking powders be prohibited. At that time Professor Prescott probably had not read the experimental work done by Professors Smith and Flint, nor realized that the most exhaustive search by the cream of tartar baking-powder people had failed to reveal a single case of ill effects resulting from the use of breadstuffs made with the many hundreds of millions of pounds of alum baking powder.

Dr. W. J. Johnson states that "if" it is a fact that a certain amount of alum remains unchanged in the bread, there can be no question of its deleterious influence. It is not quite clear whether the influence of the bread or the alum is deleterious; but anything is fair that assails alum, even if but indirectly. The doctor concludes by stating that he unqualifiedly unites "with those who ask for such legislation as will forbid the use of alum for this purpose." Who these are he does not say; nor does he state for what purpose he wishes the use of alum forbidden. From the context it would appear that he wishes legislation to prevent the use of alum in contracting the blood vessels of the stomach and intestines, a request which, on its face, appears innocuous enough. However, his testimony is a part of the "overwhelming mass" already referred to.

Prof. Charles F. Chandler, in a short note (p. 626), states that nothing would induce him to have alum baking powder used in his family. This is, of course, a personal matter and does not concern the public. He states that he has not at hand the facts or arguments for a proper treatment of the subject. When he has, it will be time enough to consider them.

Prof. S. C. Busey (p. 626) is an invalid, and not an expert in the chemistry of foods. He objects, quite properly, to the use of alum as a food. His testimony is entirely irrelevant.

Medical Inspector John C. Wise states that alum baking powder produces a heavier and more indigestible bread than those made with tartrate (bitartrate?) of potash.

This statement is not supported by the general experience of the public. His other statements about the effects of alum on the mucous membranes of the stomach have nothing to do with food prepared with alum baking powder, and hence does not call for comment.



An article by the late Dr. N. A. Mott, jr., is made to do duty as it so often has done before. Dr. Mott's experiments consist of feeding dogs of biscuits made with immense quantities of alum baking powder. The unfortunate dogs vomited and trembled, but he kept on filling them up. Finally he got them very sick. Without going into a criticism of Dr. Mott's work, it is sufficient to state it is entirely contradicted and overthrown by the investigations of Professors Smith and Flint.

Respectfully submitted,

Morehouse Manufacturing Company, Savannah, Ga.; Southern Manufacturing Company, Richmond, Va.; Sea Gull Specialty Company, Baltimore, Md.; Canby, Ach & Canby, Dayton, Ohio; Jaques Manufacturing Company, Chicago, Ill.; C. Read & Co., Baltimore, Md.; J. D. & R. S. Christian Company, Richmond, Va.; Wabash Baking Powder Company, Wabash, Ind.; The Pure Food Company, St. Louis, Mo.; Perfect Baking Powder Company, St. Louis, Mo.; Taylor Baking Powder Company, St. Louis, Mo.; Henry Petring Grocery Company, St. Louis, Mo.; Eddy & Eddy, St. Louis, Mo.; E. Metzner, St. Louis, Mo.; Shepard Baking Powder Company, St. Louis, Mo.; Bain & Chapman Manufacturing Company, St. Louis, Mo.; J. O. Grant Manufacturing Company, St. Louis, Mo.; Aroma Coffee and Spice Company, St. Louis, Mo.; Hanley & Kinsella Coffee and Spice Company, St. Louis, Mo.; David G. Evans & Co., St. Louis, Mo.; Forbes, Brother & Co., St. Louis, Mo.; Goddard-Lepere Coffee and Spice Company, St. Louis, Mo.; Edward Western Tea and Spice Company, St. Louis, Mo.; Dodson, Braun Manufacturing Company, St. Louis, Mo.; J. C. Grant Chemical Company, Chicago, Ill.; Calumet Baking Powder Company, Chicago, Ill.; S. E. Seger's Sons, Quincy, Ill.; McFadden Coffee and Spice Company, Dubuque, Iowa; The J. P. Dieter Company, Chicago, Ill.; J. H. Conrad & Co., Chicago, Ill.; Thompson & Taylor Spice Company, Chicago, Ill.; The R. T. French Company, Rochester, N. Y.; Dudley & Co., Fairport, N. Y.; Crescent Manufacturing Company, Seattle, Wash.; Chapman & Smith Company, Chicago, Ill.; Kenton Baking Powder Company, Cincinnati, Ohio; Closset & Devers, Portland, Oreg.; Gulf Manufacturing Company, New Orleans, La.; McCormick, Behnke & Co., St. Paul, Minn.; Bis-Ket Manufacturing Company, Baltimore, Md.; Dean-Lilly Coffee and Spice Company, Memphis, Tenn.; Hughes Bros. Manufacturing Company, Dallas, Tex.; Griggs, Cooper & Co., St. Paul, Minn.; Foley Bros. & Kelly Merchandise Company, St. Paul, Minn.; C. R. Groff Company, St. Paul, Minn.; P. B. Hunt & Co., Minneapolis, Minn.; Imperial Coffee and Spice Company, Duluth, Minn.; Stagmaier & Fletcher, Chattanooga, Tenn.; Tone Bros., Des Moines, Iowa; E. Schneider & Co., Cleveland, Ohio; Sherer Bros., 22 River street, Chicago, Ill., and others not printed.

AMERICAN BAKING POWDER ASSOCIATION,  
A. CRESSY MORRISON, *Secretary-Treasurer.*







